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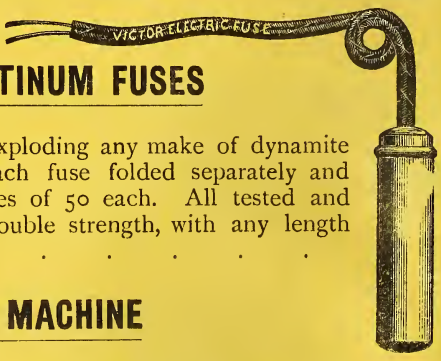

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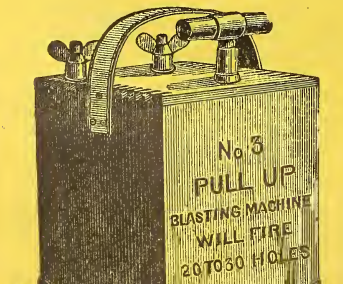

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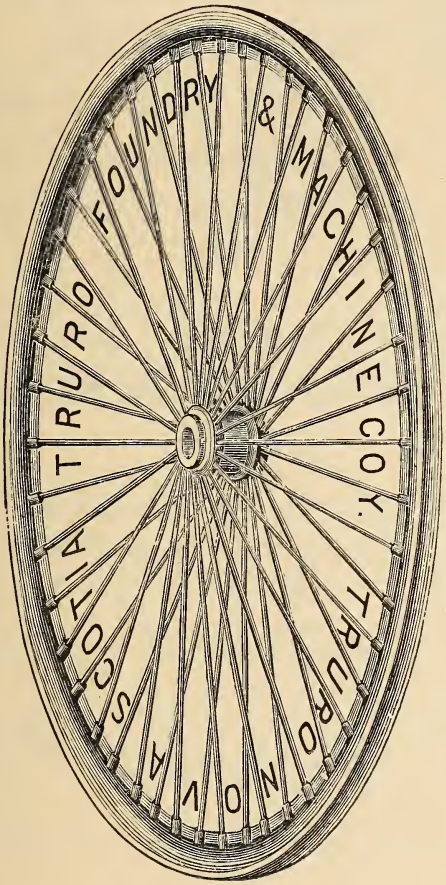

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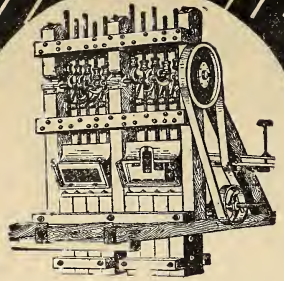

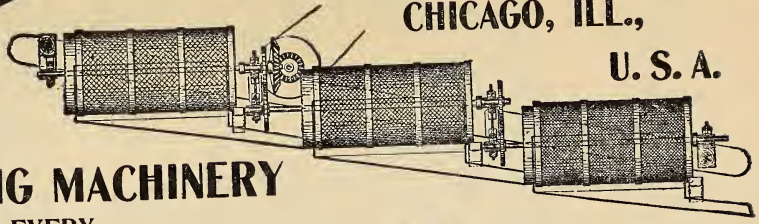

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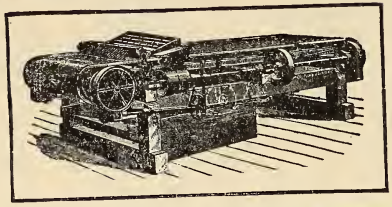

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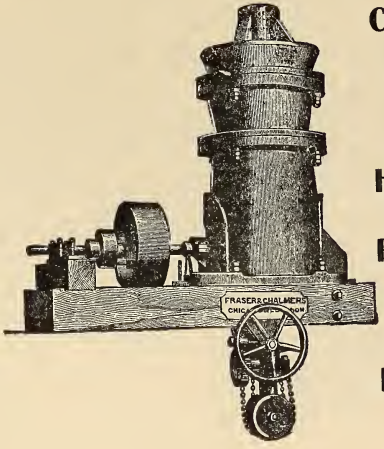

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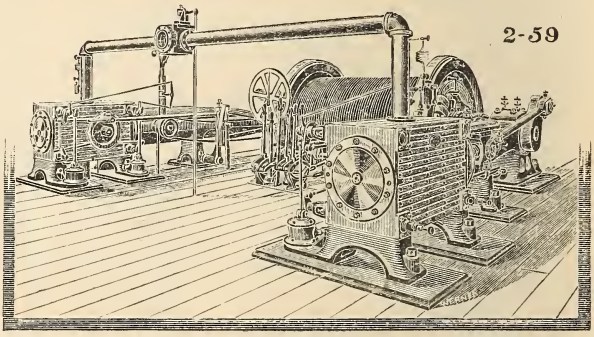

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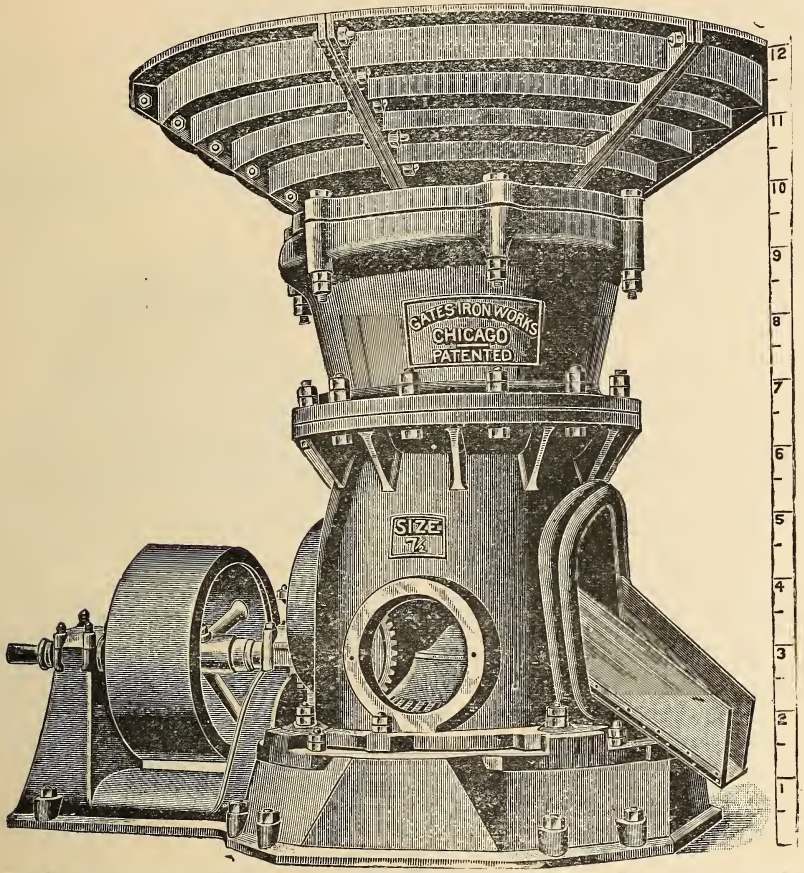

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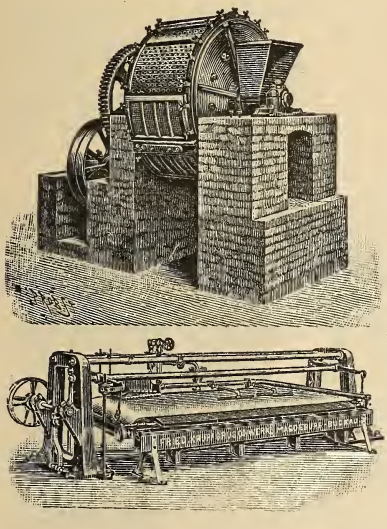

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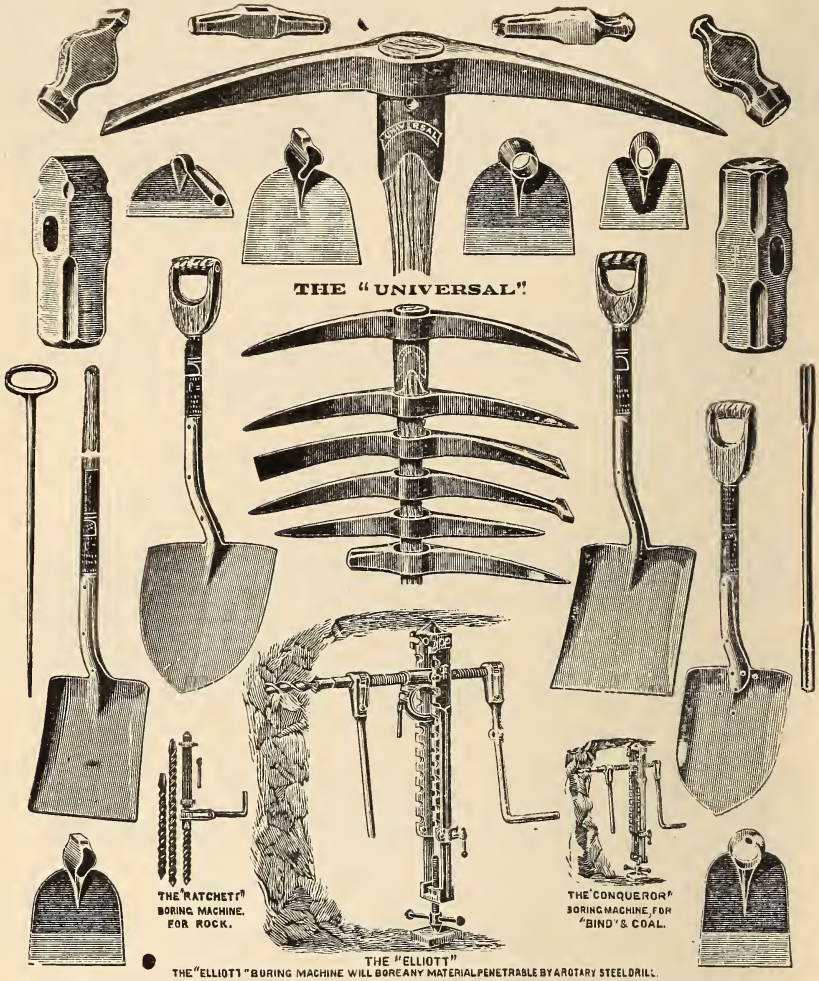
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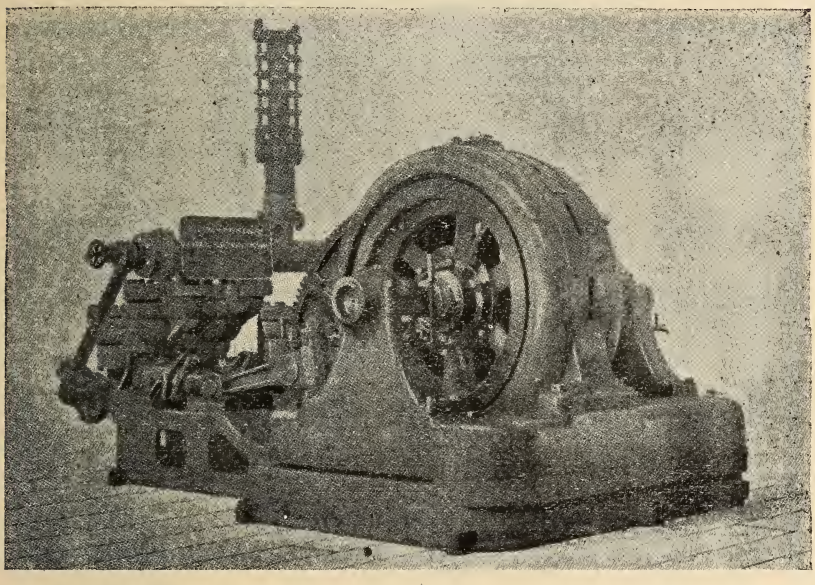

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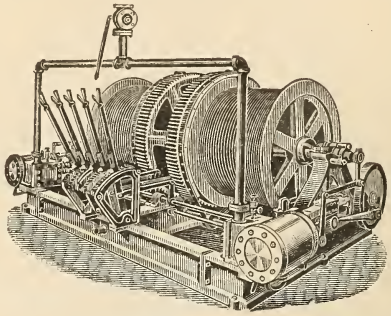

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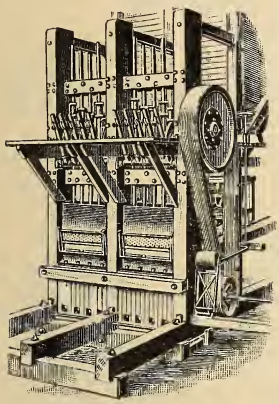

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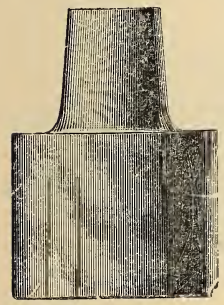

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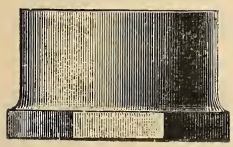

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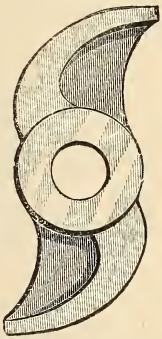

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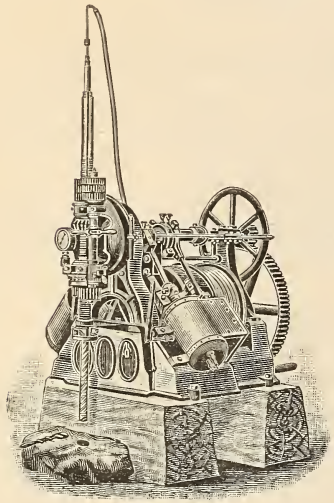

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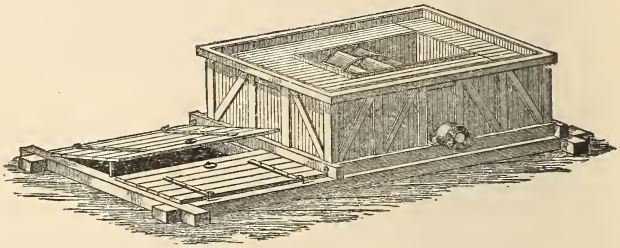

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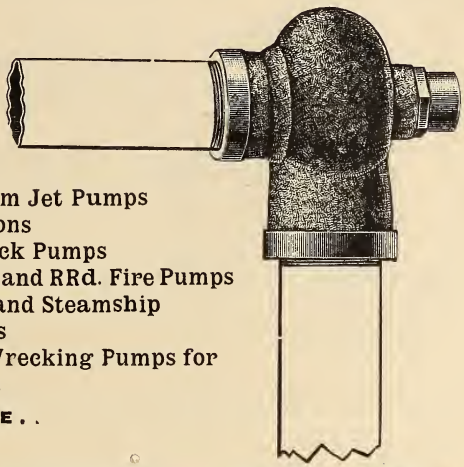

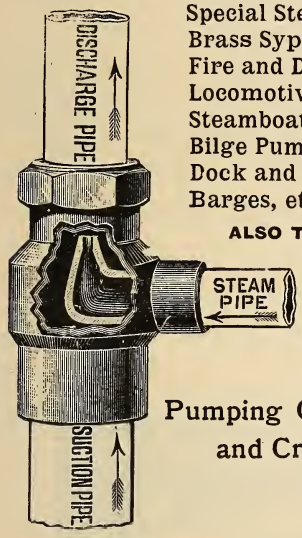

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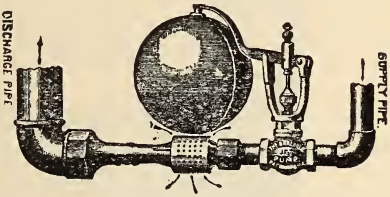

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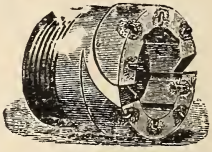

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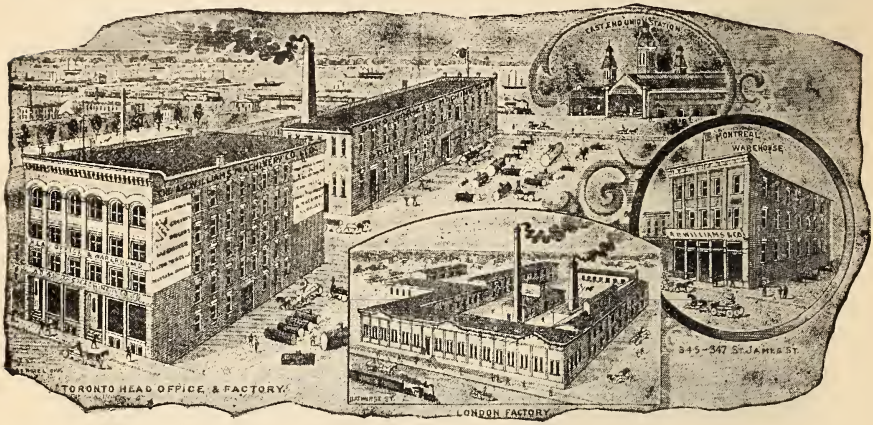

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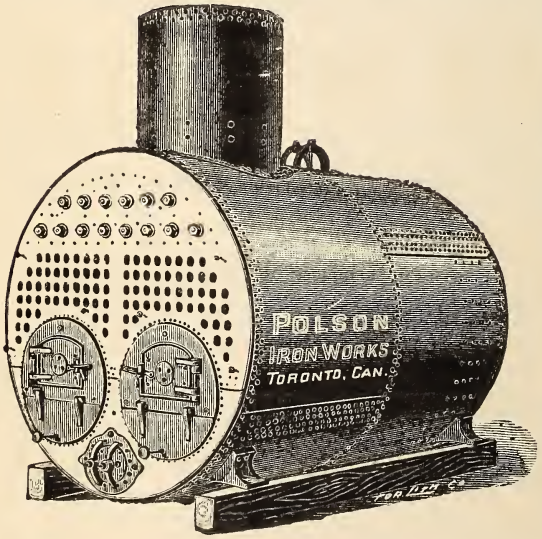

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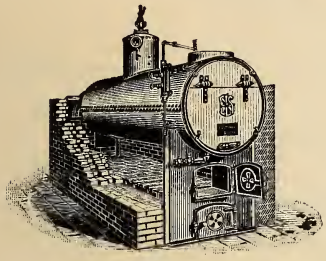

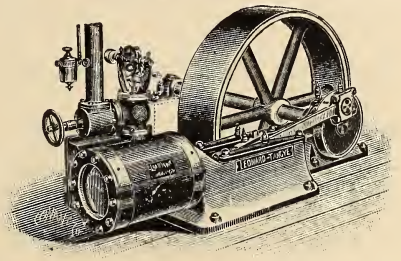

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The ores of Iron, Copper, Lead, Silver, Gold, Tin and Coal are held by the Crown, and are granted on easy terms, on long leases from forty to eighty years. The other minerals are granted in fee with the land at nominal rates.

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The Mineral Production has increased from $2,608,608 in 1890 to $7,146,425 in 1896.

The Production of the Lode Mines has increased from $17,000 in 1887 to $4,250,000 in 1896.

The Production of the Lode Mines rose from $2,340,000 in 1895 to $4,250,000 in 1896.

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A first discoverer of valuable metals, ores or minerals, is entitled to a free grant of one location of 40 acres where the vein or deposit is not less than 10 miles from the nearest known mine, vein or deposit of the same metal, ore or mineral.

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Mining concessions are divided into three classes :—

1. In unsurveyed territory (*a*) the first class contains 400 acres, (*b*) the second, 200 acres, and (*c*) the third, 100 acres.

2. In surveyed townships the three classes respectively comprise one, two and four lots.

All lands supposed to contain mines or ores belonging to the Crown may be acquired from the Commissioner of Crown Lands (*a*) as a mining concession by purchase, or (*b*) be occupied and worked under a mining license.

No sale of mining concessions containing more than 400 acres in superficies can be made by the Commissioner to the same person. The Governor-in-Council may, however, grant a larger extent of territory up to 1,000 acres under special circumstances.

The rates charged and to be paid in full at the time of the purchase are $5 and $10 per acre for mining lands containing the superior metals* ;

* The superior metals include the ores of gold, silver, lead, copper, nickel, graphite, asbestos, mica, and phosphate of lime. The words inferior metals include all other minerals and ores.

the first-named price being for lands situated more than 12 miles and the last-named for lands situated less than 12 miles from the railway.

If containing the inferior metals, $2 and $4, according to distance from railway.

Unless stipulated to the contrary in the letters patent in concessions for the mining of superior metals, the purchaser has the right to mine for all metals found therein; in concessions for the mining of the inferior metals, those only may be mined for.

Mining lands are sold on the express condition that the purchaser shall commence *bona fide* to mine within two years from the date of purchase, and shall spend not less than $500 if mining for the superior metals; and not less than $200 if for inferior metals. In default, cancellation of sale of the mining land.

(*b*) Licenses may be obtained from the Commissioner on the following terms:—Application for an exploration and prospecting license, if the mine is on private land, $2 for every 100 acres or fraction of 100; if the mine is on Crown Lands (1) in unsurveyed territory $5 for every 100 acres, and (2) in unsurveyed territory $5 for each square mile, the license to be valid for three months and renewable. The holder of such license may afterwards purchase the mine, paying the prices mentioned.

Licenses for mining are of two kinds. Private lands licenses where the mining rights belong to the Crown, and public lands licenses. These licenses are granted on payment of a fee of $5, and an annual rental of $1 per acre. Each license is granted for 200 acres or less, but not for more; is valid for one year and is renewable on the same terms as those on which it was originally granted. The Governor-in-Council may at any time require the payment of the royalty in lieu of fees for a mining license and the annual rental—such royalties, unless otherwise determined by letters patent or other title from the Crown, being fixed at a rate not to exceed three per cent. of the value at the mine of the mineral extracted after deducting the cost of mining it.

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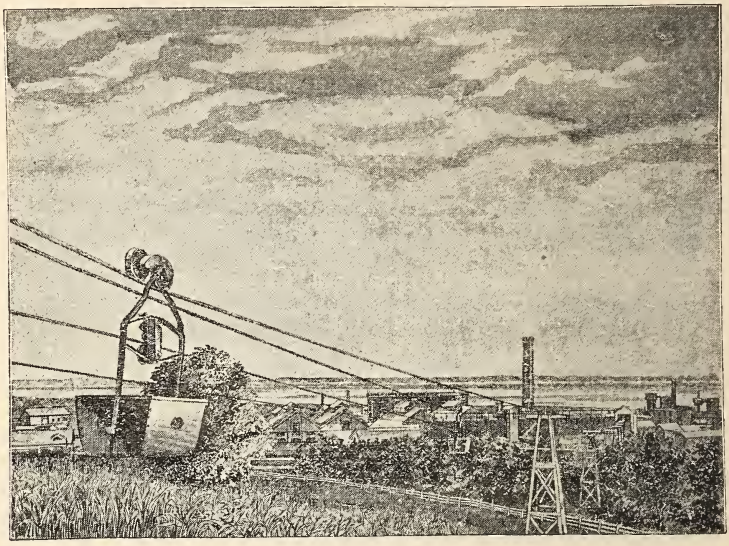

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BY

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Editor of the Canadian Mining Review, Secretary Federated Canadian Mining Institute, Secretary General Mining Association of the Province of Quebec, Secretary Ontario Mining Institute, Hon. Secretary Mining Society of Nova Scotia, Hon. Mem. British Columbia Association of Mining Engineers.

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THE CANADIAN MINING MANUAL is compiled and kept posted up from official reports and other equally authoritative sources, and it is requested that Prospectuses, Annual Reports, Statements of Accounts and other documents bearing upon the scope of the work be promptly mailed to the offices of the CANADIAN MINING REVIEW, Slater Building, Ottawa Ont.

Managers and Secretaries are respectfully requested to co-operate with the publisher in making the statements respecting the operations of their companies as complete and reliable as possible.

THE CANADIAN MINING MANUAL is published on the 1st of July of each year, and is entered according to Act of the Parliament of Canada, in the year 1891, by B. T. A. Bell, at the Department of Agriculture.

MORTIMER & CO., PRINTERS,

PREFACE.

The year 1896 has been notable for a very marked and gratifying increased activity in the development of the mineral resources of the Dominion, and in the additions to the number of its dividend-paying mines.

An approximate estimate places the total value of the yield at $23,627,305, or an advance over the year 1895 of $1,627,305. The principal products were: Coal and coke, $8,117,865; gold and silver, $4,957,785; copper, nickel and pyrites, $2,277,303; petroleum and natural gas, $1,431,947; structural materials, $4,392,834; asbestos, $429,856; lead, $721,384; iron ore, $184,313.

In Nova Scotia the coal production was increased to 2,235,472 tons, and the gold yield to 25,596 ozs. The most important feature of the year here was the opening up and equipment of a number of new gold properties and the installation of a very fine milling and chlorination plant, at a cost of $80,000, at North Brookfield. The renewed activity in the large low-grade deposits promises most excellent results, and not the least favorable feature of this activity is the fact that almost all of the capital is coming either from the Province itself or from the sister Province of Quebec. The occurrence of gold in Nova Scotia has been very carefully studied by the officers of the Geological Survey of Canada, and has become well understood. The veins are found to follow the lines of anticlinal folds, in precisely the same manner with the well known reefs of Bendigo, in Australia, but the flexures are broader and further apart in Nova Scotia, and the veins themselves appear to be more permanent in depth. The knowledge now gained of these veins renders it desirable that they should be worked in a larger way, combining series of parallel and adjacent deposits under a single management, and opening them up by means of one or two principal shafts. From the capital and management lately introduced it is confidently anticipated that the yield will be very largely increased in 1897, and that the gold mining industry of Nova Scotia will very soon attain dimensions and results more in keeping with its unquestioned natural resources. The other minerals produced were: Iron ore, 56,334 tons, a decrease of 23,302 tons; coke, 58,741 tons, an increase of 17,244 tons; gypsum, 130,489 tons, a decrease of 2,811 tons. Small quantities of manganese, copper and graphite were also shipped.

In Quebec the production of asbestos, copper pyrites, mica, chromite and graphite constituted the principal industries, and was carried on much on the same lines as in previous years. Towards the end of the year some British capital was invested in asbestos mining at Danville, and in the production of mica in Ottawa County. It can only be a matter of comparatively short time now until the gold fields of this section of the Dominion will receive the attention and the capital that is their due. The output may be stated as: Asbestos, $429,856; pyrites, $101,155; mica, $100,000; chromite, $25,982; graphite, $10,000; gold, $3,000; charcoal pig iron, 24,713 tons.

At the moment, the most promising field for investment in Ontario undoubtedly occurs in connection with gold mining. The north-western part of the Province has been the scene of much activity, and several well equipped, though small, mining and milling plants have been established chiefly on the picturesque shores of the Lake of the Woods, and development is being very actively pushed throughout a wide belt of country, including Rainy Lake, Seine River, Manitou Lakes and a plexus of other smaller rivers and lakes. The areas so far opened are free-milling. In Hastings County a large plant has been put into operation to treat the refractory mispickel ores of the Deloro Mine by the bromo-cyanide process. Other gold properties are being opened up in this district, at Jackfish and other points on the north shore of Lake Superior, and at Lake Wahnapitae and elsewhere in the eastern section of the Province. The nickeliferous pyrrhotites and copper-bearing deposits at Sudbury have been worked on much the same scale as in former years. The mattes are now shipped exclusively to the United States to be refined, and statistics for the year 1896 show the production of that country, wholly from Ontario ores and matte, to have been 3,697,039 pounds, as compared with 2,678,661 pounds in 1895, an increase of 1,018,378 pounds. The workings in the Copper Cliff Mine have reached the tenth level and a depth of about 800 feet in the shaft. The establishment of an iron furnace at Hamilton has brought about the re-opening of several iron mines at Hastings County, and the production of about 5,000 tons of magnetite and 4,000 tons of hematite. About 1,000 tons of bog ores were also used from the Counties of Norfolk and Kent. The other mineral products were petroleum, salt, natural gas, mica, gypsum and graphite. Twenty-nine mining companies were incorporated under the Ontario Joint Stock Companies Act, as against twenty-four such companies during the previous four years.

Coming finally to our western-most Province, British Columbia, which certainly possesses a wealth and variety of ores greater than any other portion of the Dominion, we find the mineral production to have advanced from $5,655,302 in 1895 to $7,146,425 in 1896, a very gratifying increase of $1,491,123. A very large share of attention was directed to the unique auriferous pyrrhotites of the Trail Mining District of West Kootenay, where the output increased to $1,243,360, as compared with $702,457 in 1895. The leading producers were the War Eagle and Le Roi companies, which have paid to date $187,000 and $400,000 respectively in dividends. Of the different metals produced in the Province, gold (from quartz) shows an increase of $458,689; silver adds $1,123,460; lead, $189,129; and copper, $143,234. The increase from placer mining was not quite up to expectations, being $101,600, of which more than half, or $54,550, was from the Keithly Creek Division and the product of the Cariboo Hydraulic Mine. A feature worthy of remark is the remarkable increase during the past five years in lode mining, the production from this source having advanced from $29,607 in 1891 to the magnificent total of $4,257,179, of which nearly one-half was the output of the Slocan Silver Lead Division alone. Of the dividend-paying mines other than those already mentioned, the following figures will be of interest:

Reco M. & M. Co.	(silver-lead)	to date	.....	$187,500
Byron N. White Co.	"	"	.....	350,000
Rambler Cariboo	"	"	.....	40,000
Cariboo M. M. & S. Co.	(gold)	"	.....	141,410

The profits of other mines are approximately estimated to be :—

Payne	(silver lead)	Slocan, to date	....	$250,000
Idaho	"	"	"	172,000
Poorman	(gold)	Nelson	"	50,000
Ruth	(silver lead)	Slocan	"	50,000
Whitewater	"	"	"	40,000
Washington	"	"	"	20,000
Slocan Boy	"	"	"	25,000
Goodenough	"	"	"	35,000
Noble Five		"	"	50,000
Jackson Mines	"	"	"	20,000
Antoine	"	"	"	10,000
Surprise	"	"	"	20,000
Monitor	"	"	"	15,000
Last Chance	"	"	"	50,000

In addition to these, it is worthy of remark that the last balance sheet of the Hall Mines (Ltd.) a powerful British company, operating the Silver King Mine at Nelson (yielding copper and silver, besides silver-lead ores, and some containing gold), shows a profit of income over expenditure of £28,067 6s. This list of profitable investments in British Columbia mines will, undoubtedly, be very largely extended during the present year.

In writing of the prospective value of British Columbia as a mining country some years ago, and when but little progress had been made towards its realization, Dr. Dawson, Director of the Geological Survey of Canada, pointed out that this Province (some 390,000 square miles in area) with the Yukon District of the North-West Territory of Canada, together contain over 1,200 miles in length of the most important metalliferous region of the continent, that of the Cordillera or Rocky Mountain Belt ; a length equivalent to that included in the whole United States, from the 49th parallel to Mexico. The actual initial development of a permanent kind in this vast tract has, so far, been principally confined to a few districts of comparatively limited size, but there is every reason to believe, from the known geological conditions and from analogy with the corresponding region to the south, that as skilled prospecting is extended from point to point, a mining country fully comparable with that of the entire western tier of States of the American Union will be found to exist.

Coincident with this great wave of mining development and mining speculation there has been a tremendous amount of company promoting, and in British Columbia alone hundreds of charters, representing many millions of nominal capital, were issued

during the year. It is to be regretted that a very large number of these promotions, ostensibly for mining purposes, have very little of an industrial character about them. They are but the merest "frothy bubbles of a speculative spirit," and will only result in loss to those who have been so unwise as to venture their money in them.

As in former years, the aim of the present edition of the MANUAL has been to present in a handily arranged form information respecting the companies and mines doing business in the various Provinces of the Dominion. The bulk of the data has been furnished by courtesy of the managers and secretaries, while free use has been made of the Reports of the various Departments of Mines and of the Geological Survey.

Special thanks are due to Mr. J. Geo. Rutherford, M. A., M. E., for valuable matter respecting the Pictou Coal Field and the drawing of the excellent map which accompanies this section of the work ; to Mr. William Blakemore, M. E., for particulars of the progress of coal mining in Cape Breton ; and to Mr. T. W. Gibson, of the Bureau of Mines, Toronto, for notes respecting the gas and oil industries of Ontario.

The large number of illustrations that form a special feature of this edition will, it is hoped, serve as an object lesson of the progress of mining in the Dominion, and help to stimulate the interest of investors in our resources as a field for remunerative investment.

OTTAWA, 1st July, 1897.

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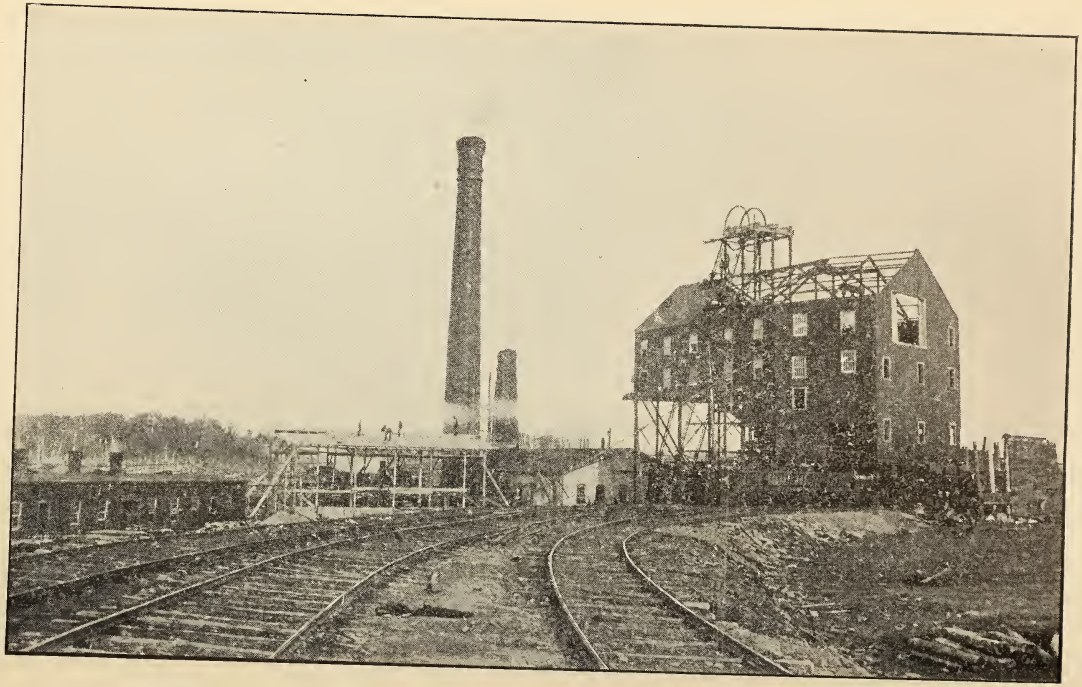
CANADA

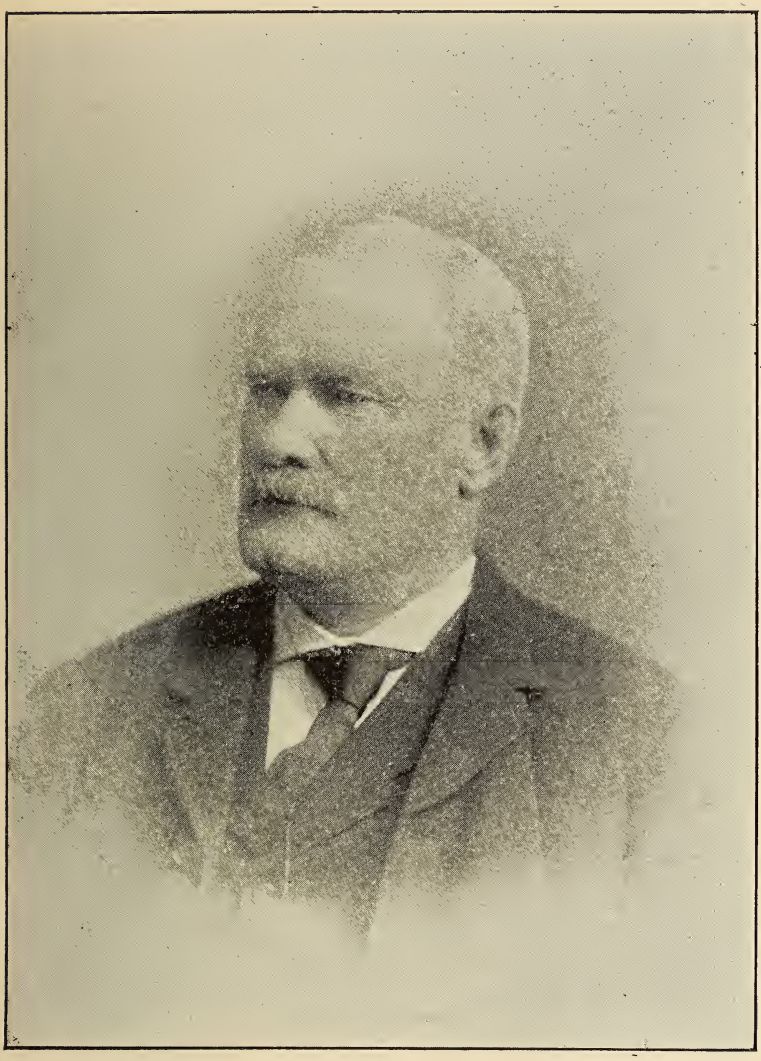
PROVINCE OF NOVA SCOTIA.



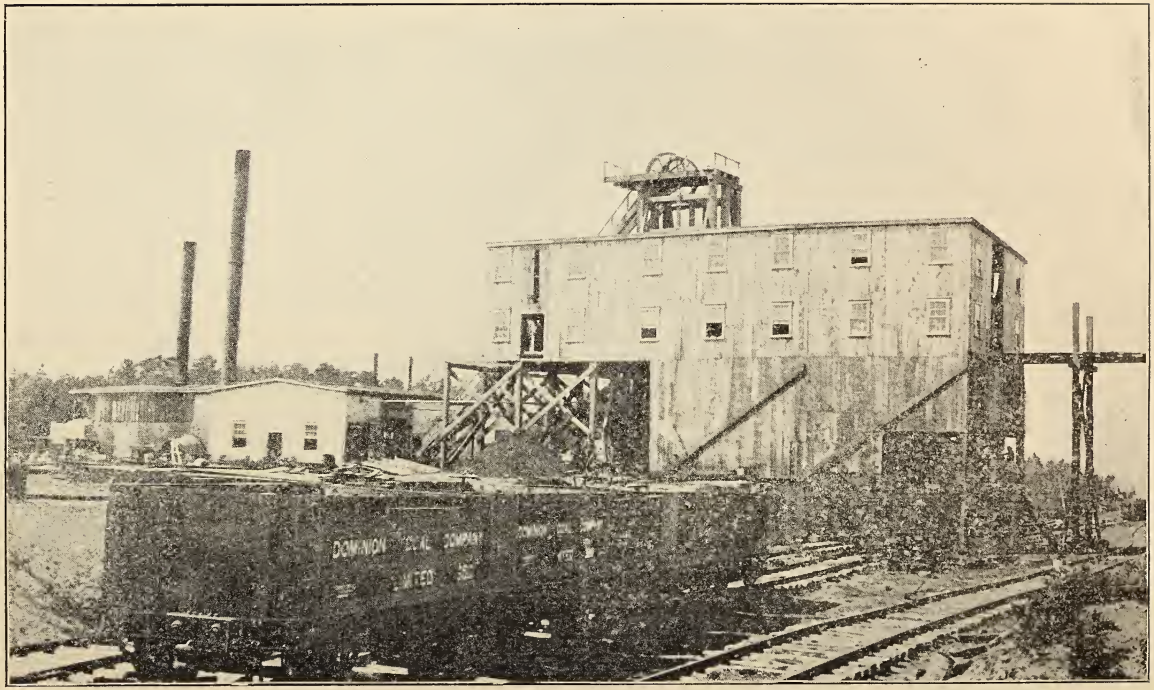
DOMINION COAL, CO. LTD.—Caledonia Colliery, Glace Bay, Cape Breton.

DOMINION COAL CO. LTD.—Dominion No. 1 Colliery, Cape Breton.

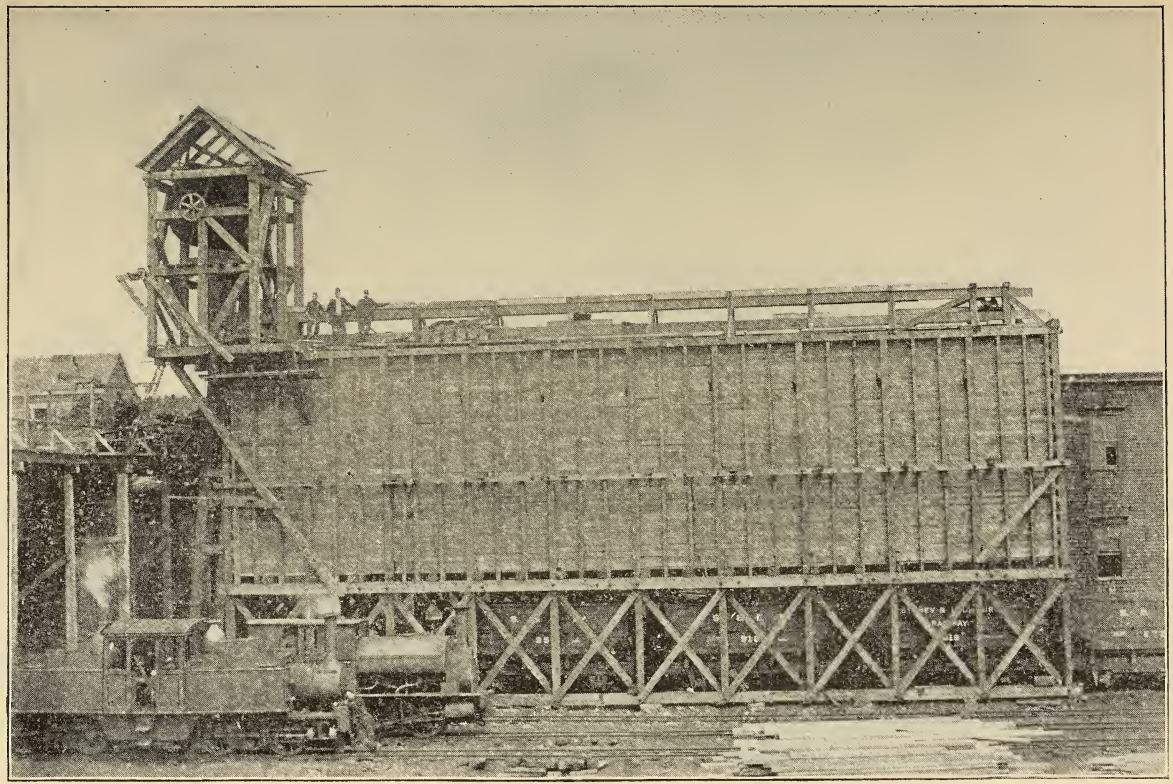
Mr. H. M. Whitney, Boston,
President, Dominion Coal Company.



Hon. David McKeen, Vice-President,
Dominion Coal Co., Cape Breton.

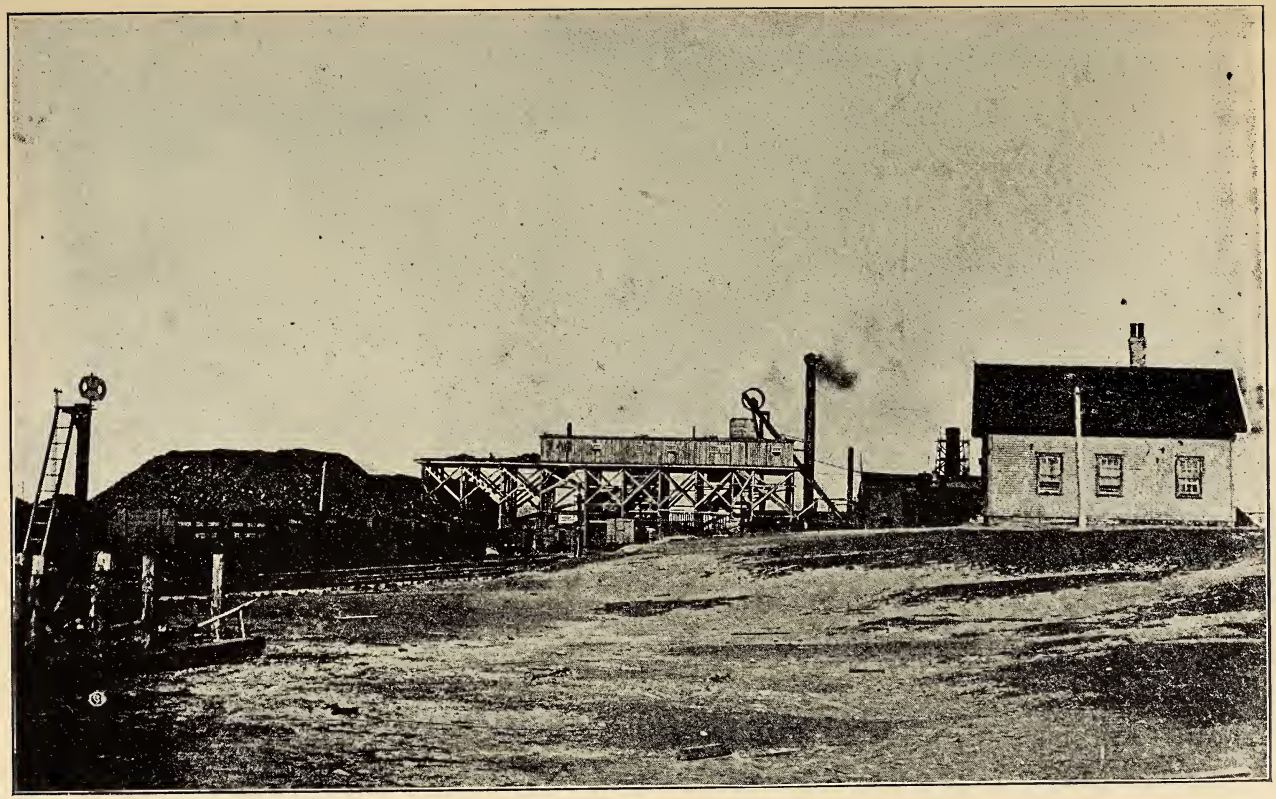


Dominion Coal Co. Ltd.—Old Bridgeport Colliery, Cape Breton.



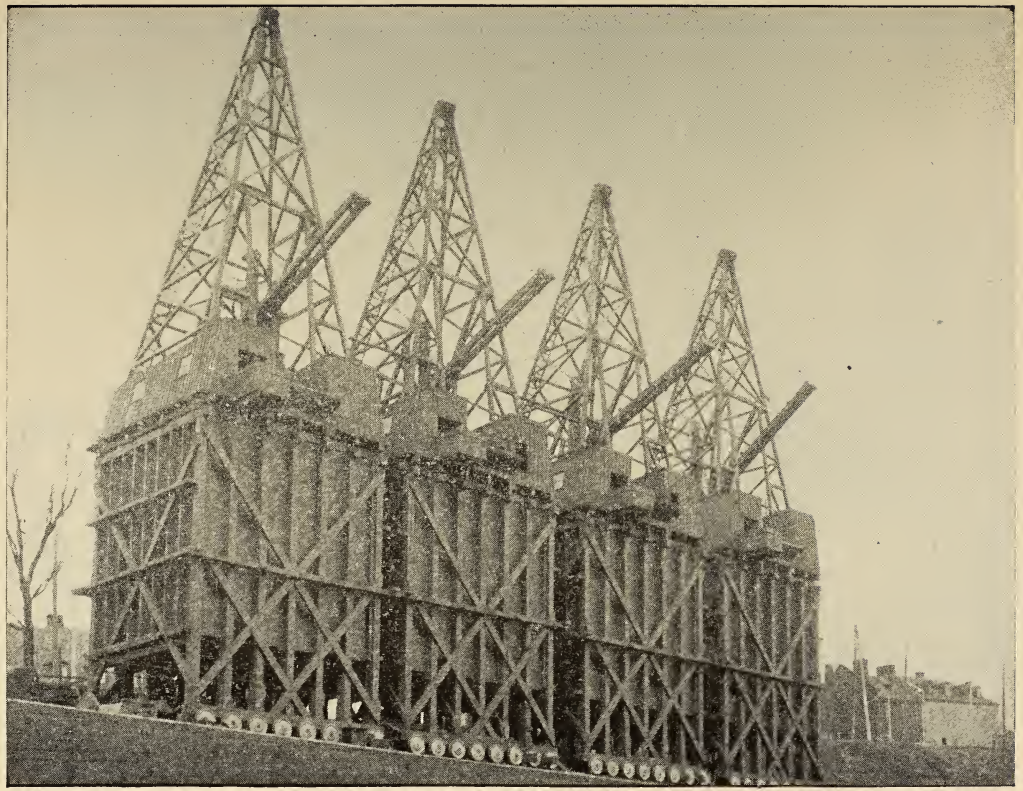
DOMINION COAL CO. LTD.—Coal Pocket, Reserve Colliery, Cape Breton.

DOMINION COAL CO. LTD.—Hub Colliery, Cape Breton.



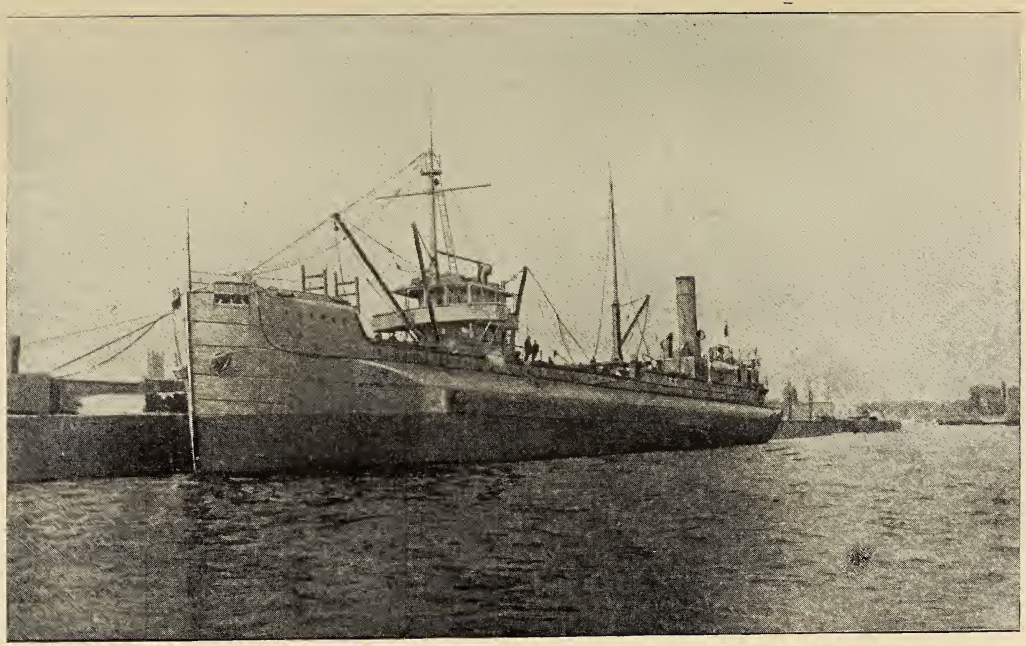
DOMINION COAL CO. LTD.—International Colliery, Cape Breton.

DOMINION COAL CO. LTD.—New Coal Washing Plant, Wash House, Elevator and Storage Bin, erected on the S. & L. Railway, three miles west of Morien Junction, Cape Breton.

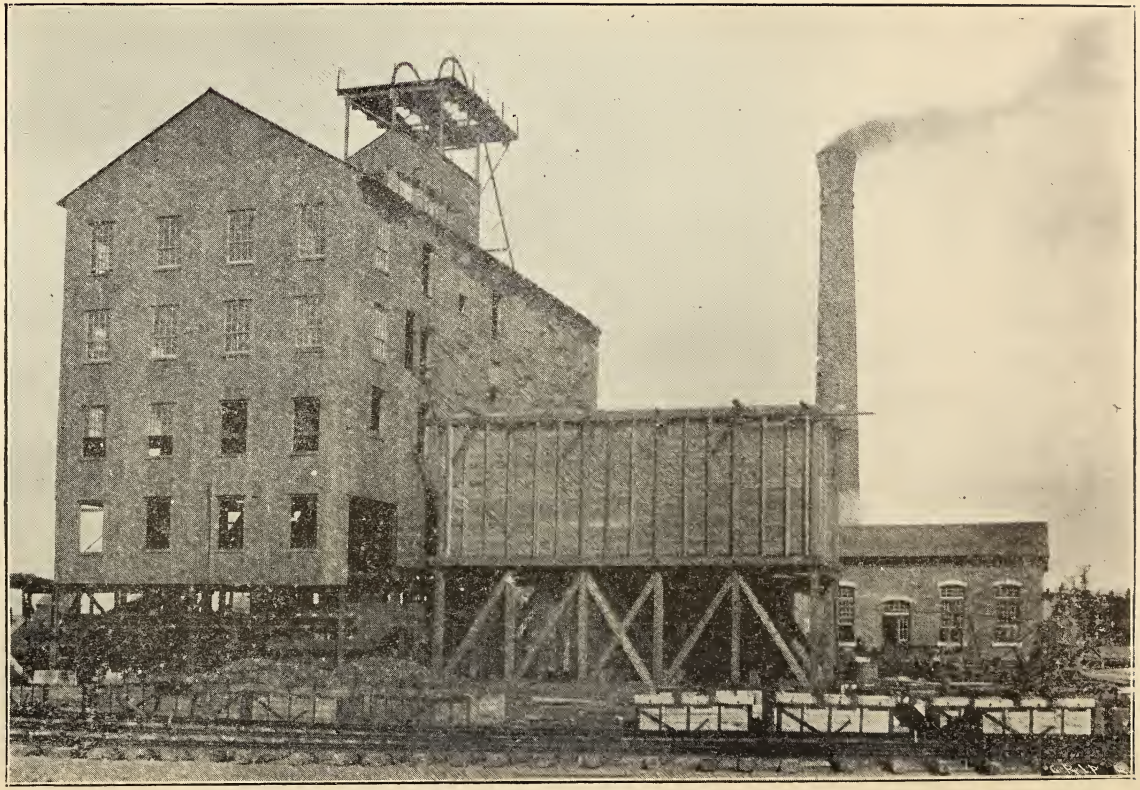


DOMINION COAL CO. LTD.—Coal Handling Towers, Hochelaga, Montreal.

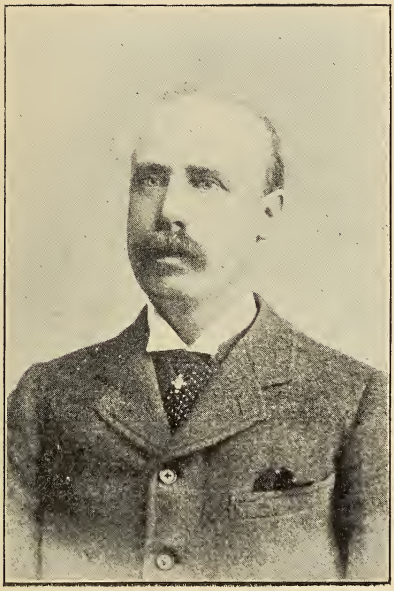
DOMINION COAL CO. LTD.—Victoria Colliery, Cape Breton.



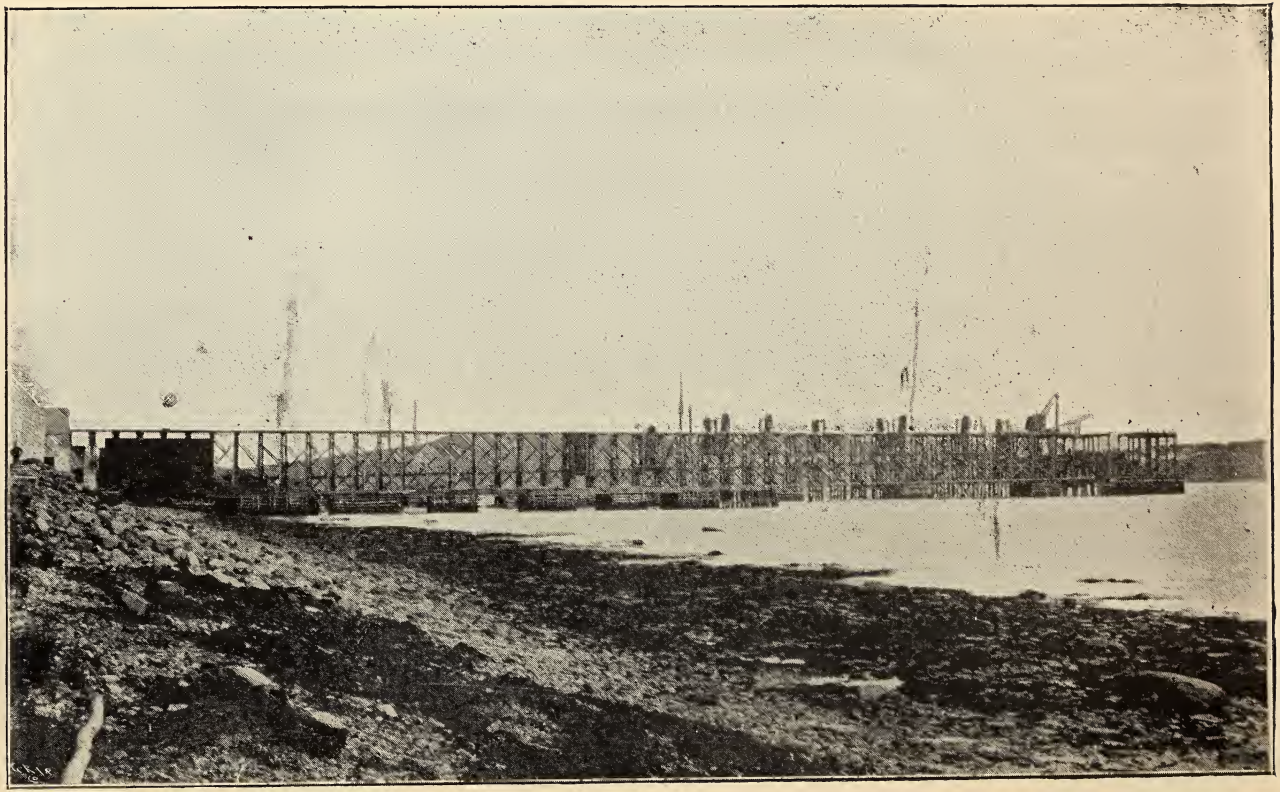
DOMINION COAL CO. LTD.—S.S. Turret Bay, new type of Steamers used for carrying Coal to the St. Lawrence.



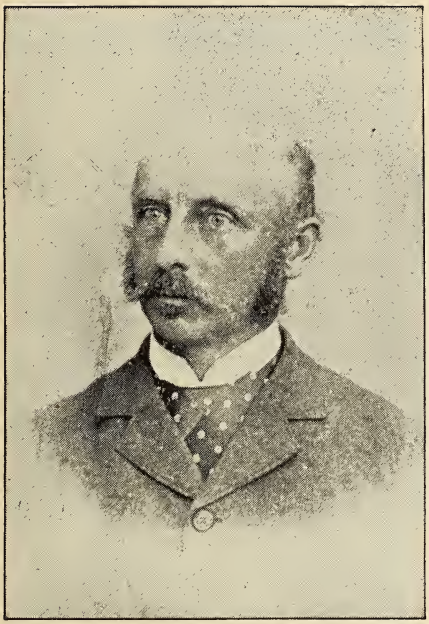
DOMINION COAL CO. LTD.—Dominion No. 1 Colliery, Cape Breton.



Mr. W. Blakemore, Mining Engineer,
Glace Bay, Cape Breton.



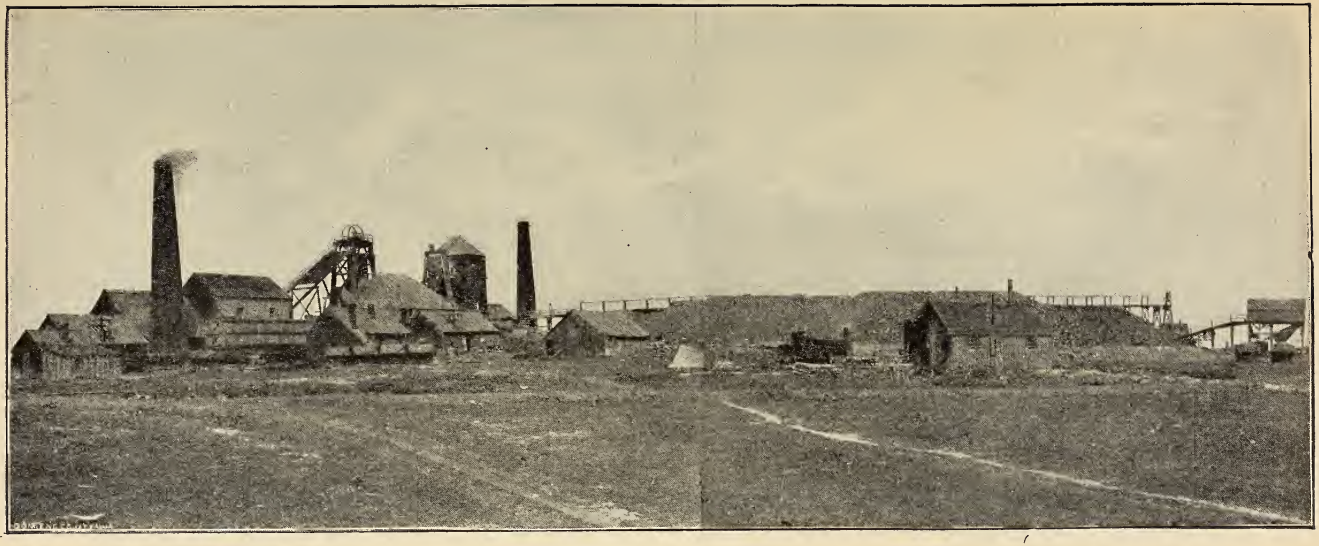
DOMINION COAL CO. LTD.—Shipping Pier at Louisburg, Cape Breton.



Dr. E. Gilpin, Jr.

Deputy Commissioner and Inspector of Mines for the Province of Nova Scotia.

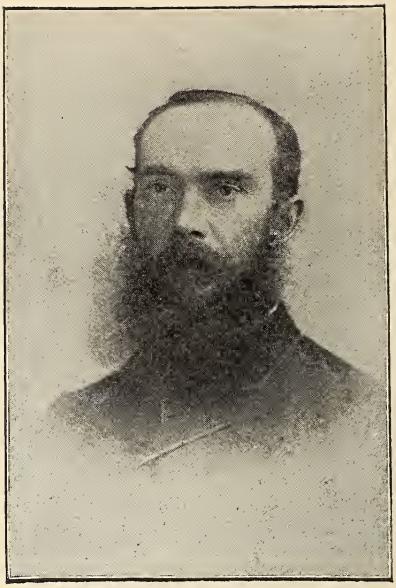
Mr. R. H. Brown, M.E.
General Manager, General Mining Association, Ltd.
Old Sydney Mines, Cape Breton.



PRINCESS PIT, OLD SYDNEY MINES, CAPE BRETON.

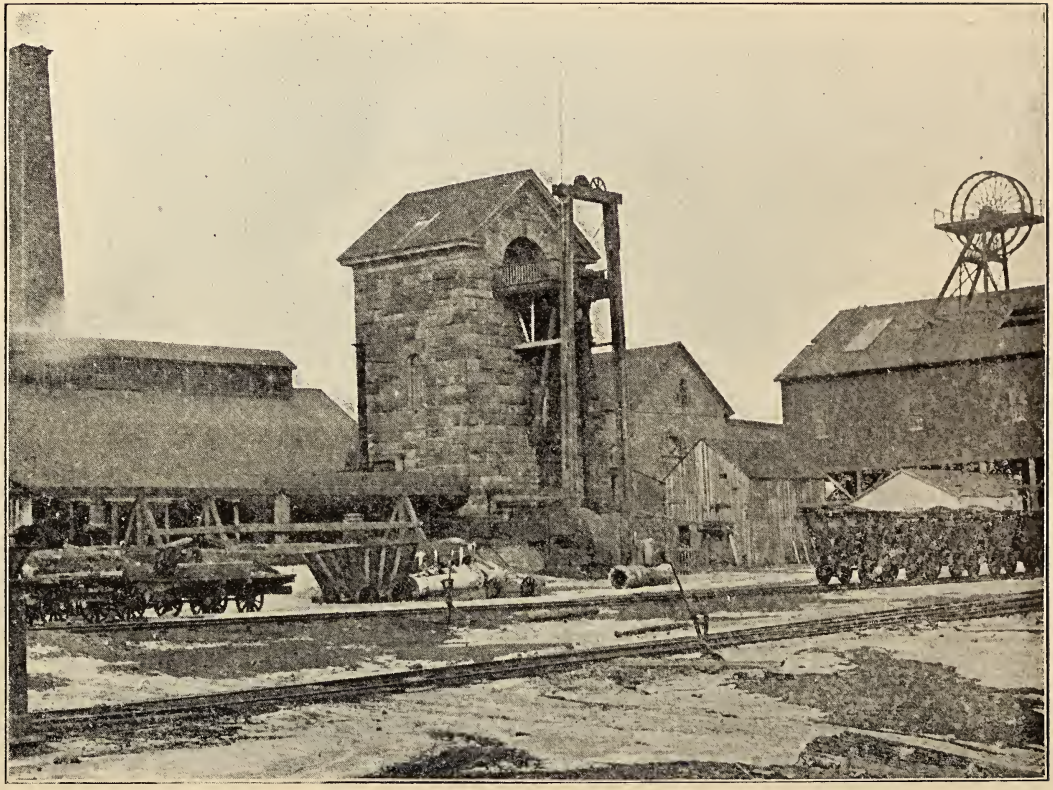
Outcrop of 14 Foot Seam, Broad Cove, Cape Breton.

Mr. W. Penn Hussey
Broad Cove Coal Company, Cape Breton.

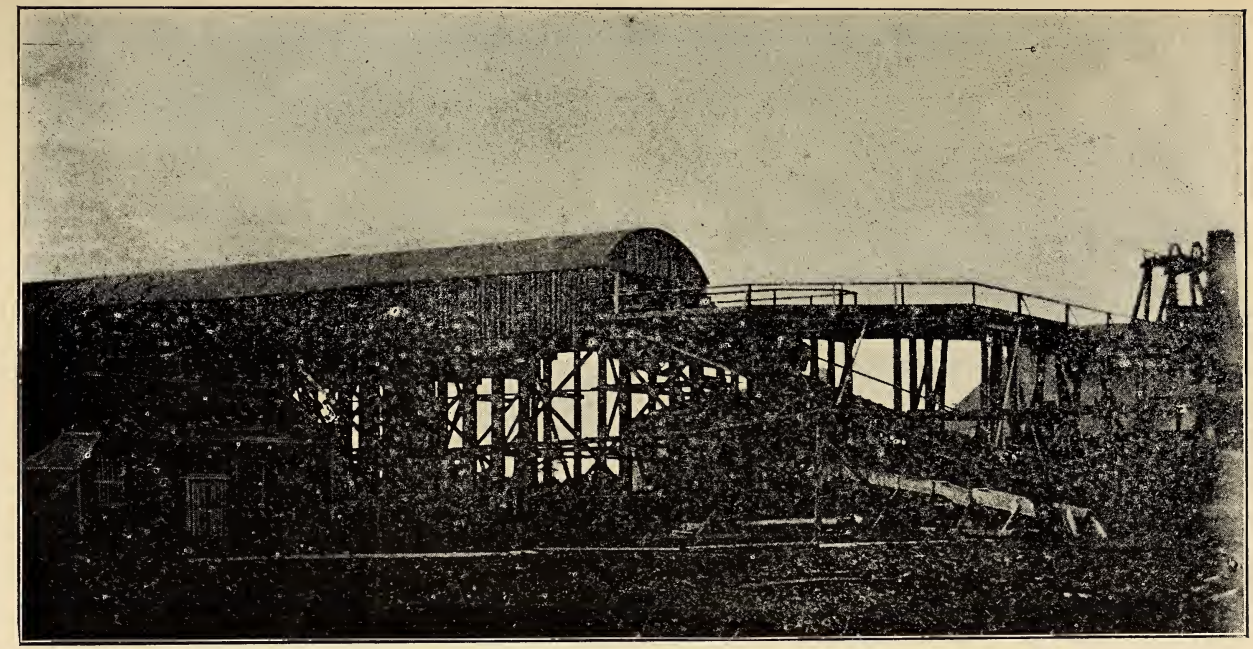


Mr. H. S. Poole, M.A., A.R.S.M.
General Manager, Acadia Coal Co. Ltd., Stellarton, N.S.

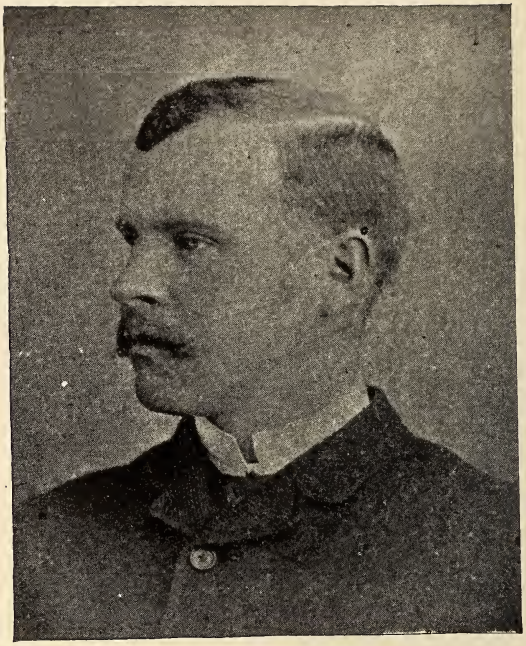
ACADIA COAL CO.—Foord Pit, Winding and Pumping Engines, Pulley Frame and Heapstead, prior to Explosion in 1880.



ACADIA COAL CO.—Bankhead and Pumping Shaft, Foord Pit, Stellarton, N.S.



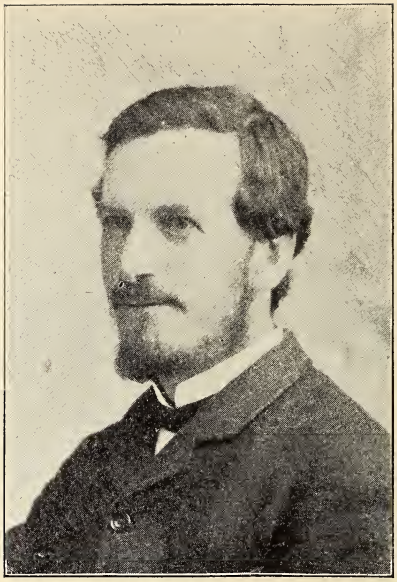
ACADIA COAL CO.—Heapstead No. II Slope, III Seam, Albion Mines, Pictou County, N.S.



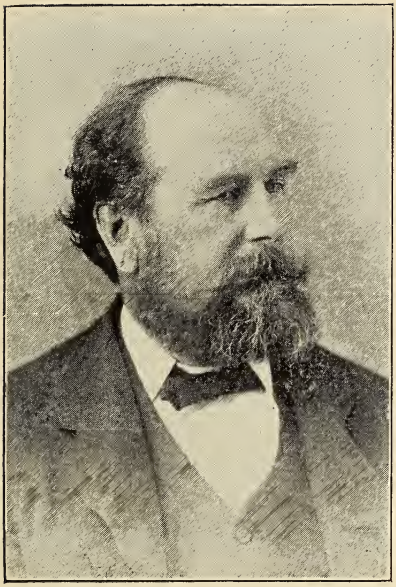
Mr. J. G. Rutherford, M.A., M.E.

Assistant Manager, Acadia Coal Co. Ltd., Stellarton, N.S.

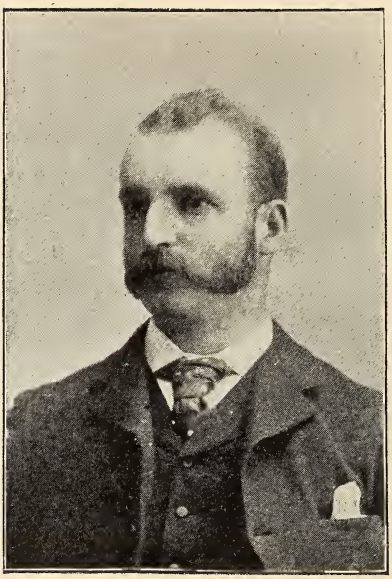
Mr. John Rutherford, Mining Engineer,
Inspector of Mines for Nova Scotia.



Mr. Hugh Fletcher, B.A., Ottawa,
Field Geologist, Geological Survey of Canada, Specialist in Coal.

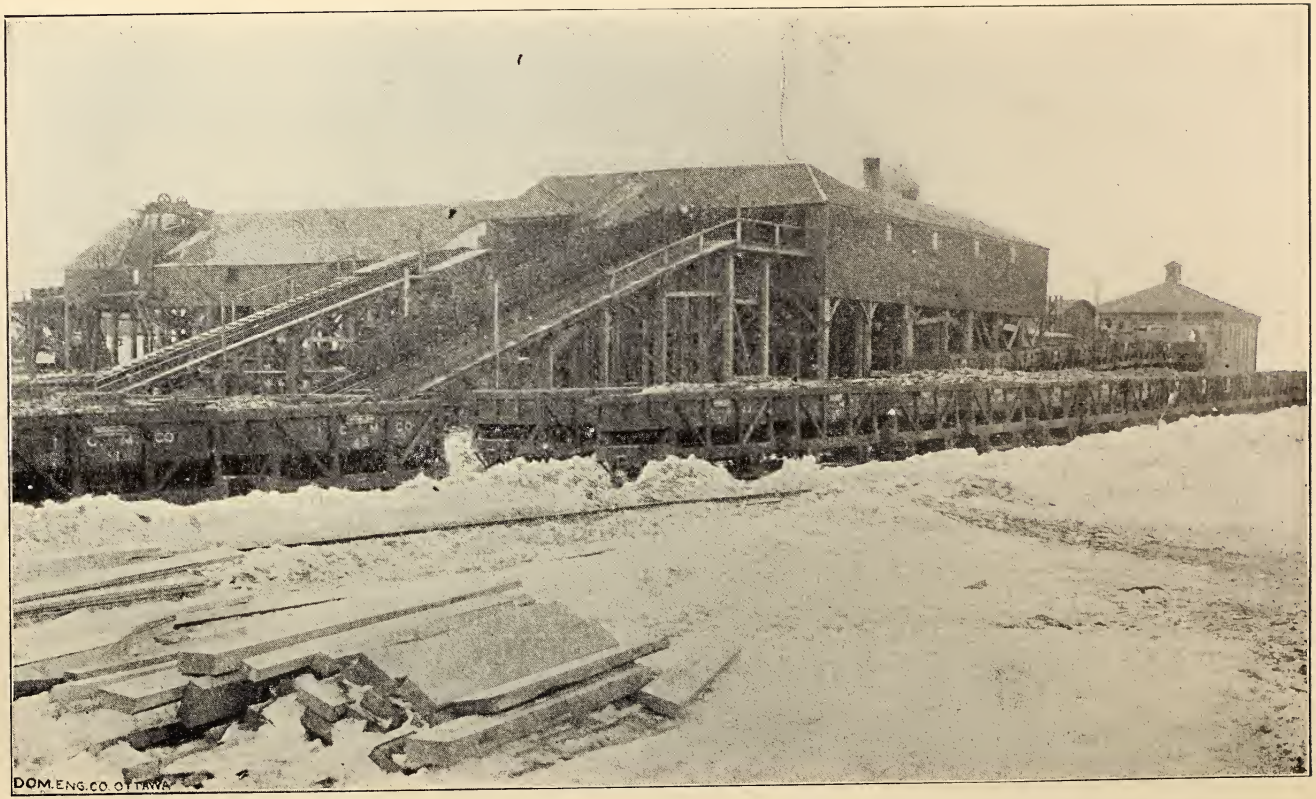


Mr. H. A. Budden, Montreal,
Managing Director, Intercolonial Coal Co.

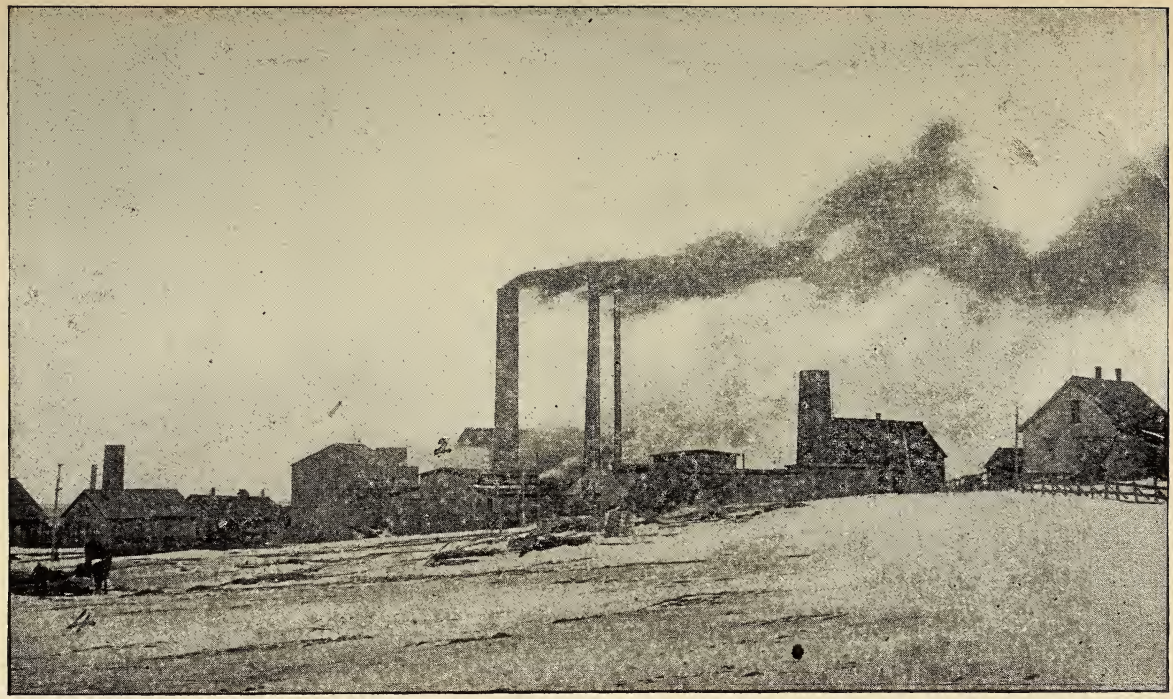


Mr. Charles Fergie, M.E., Westville,
General Manager, Intercolonial Coal Company.

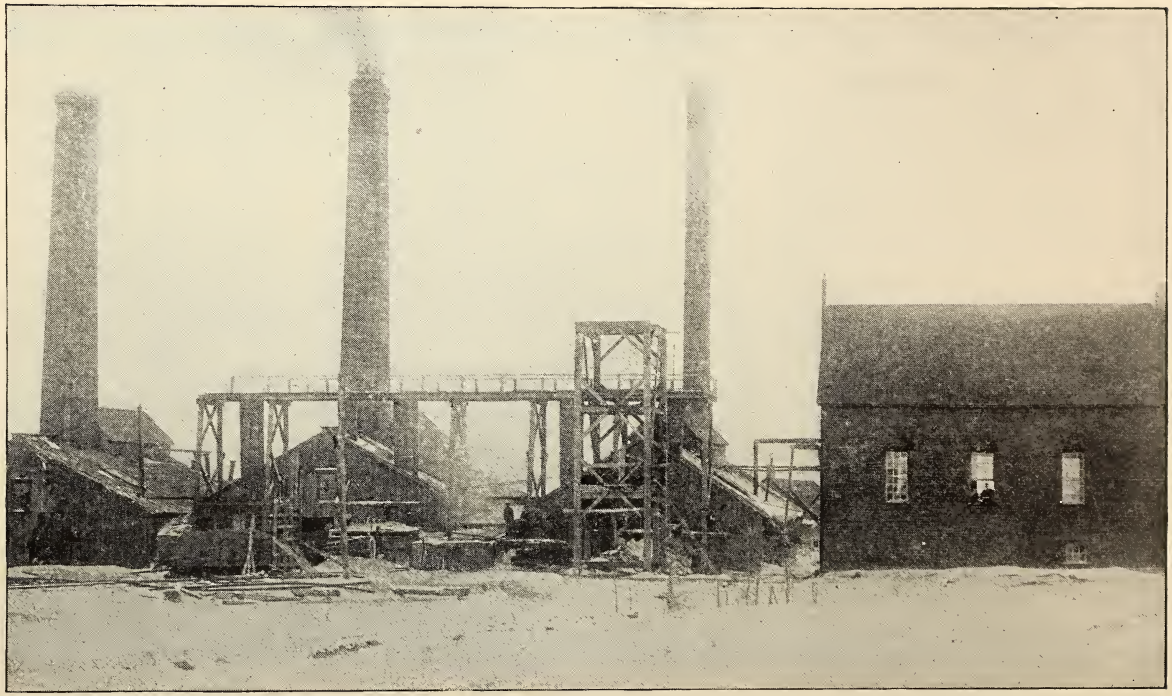
INTERCOLONIAL COAL CO.—Engine House and other Surface Works at Drummond Colliery, Pictou County.



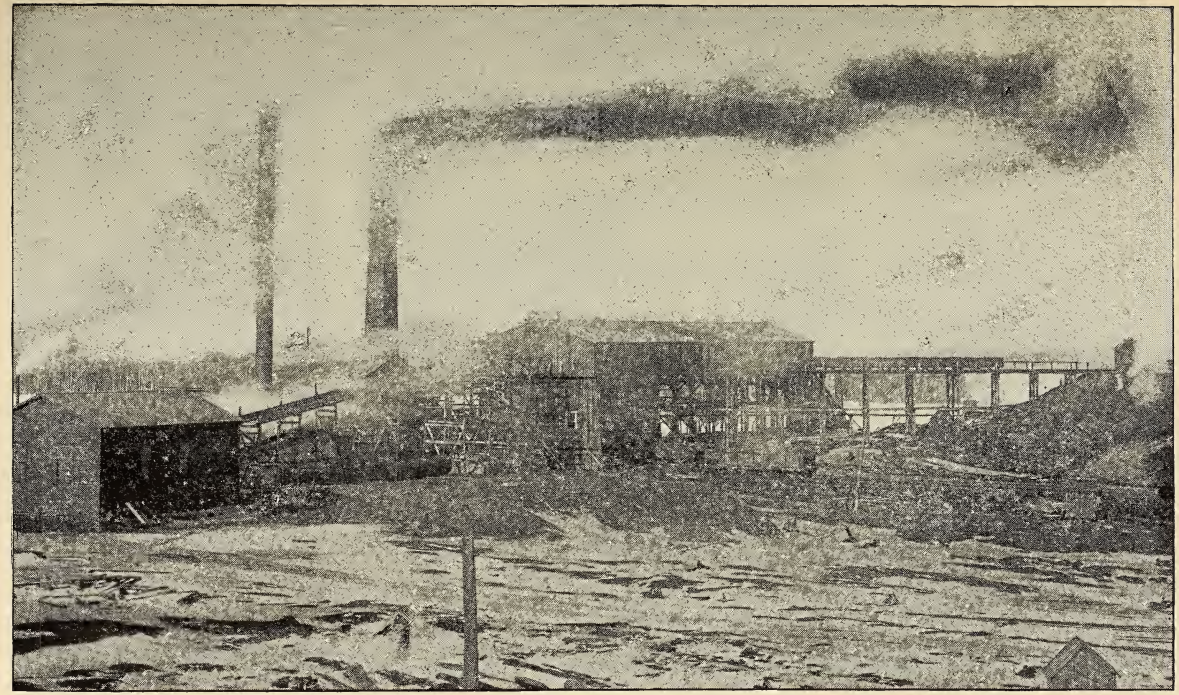
INTERCOLONIAL COAL CO.—Bankhead and Mouth of Slope, Drummond Colliery, Pictou County.



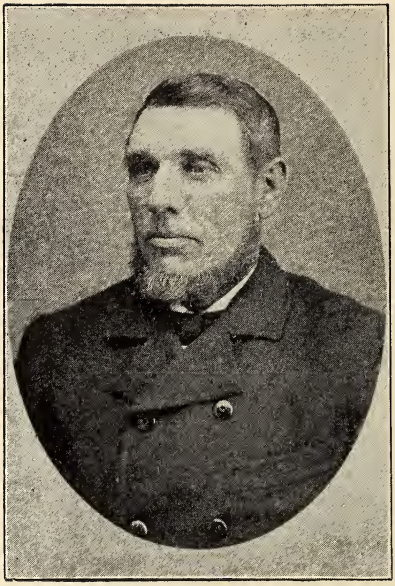
CUMBERLAND RAILWAY AND COAL CO.—No. I Slope, Springhill, N.S.



CUMBERLAND RAILWAY AND COAL CO.—No. II Slope, Springhill, N.S.

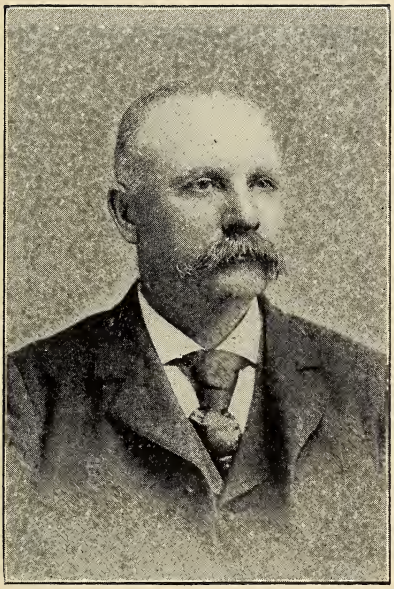


CUMBERLAND RAILWAY AND COAL CO.—No. III Slope, Springhill, N.S.



Mr. James Baird, M.E.

Lessee, Chignecto Colliery, N.S.

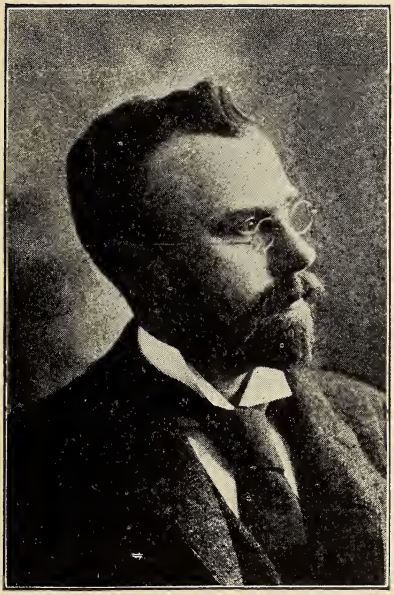


Mr. John Johnston,
Manager, Caledonia Colliery, C.B.

Mr. Robt. Archibald, C. & M. E., Joggins, Nova Scotia,
Manager, Canada Coals and Railway Co. Ltd.

PICTOU CHARCOAL IRON CO.—Furnace and Works, Bridgeville, N.S.

PICTOU CHARCOAL IRON CO.—Furnace at Bridgeville, N.S.

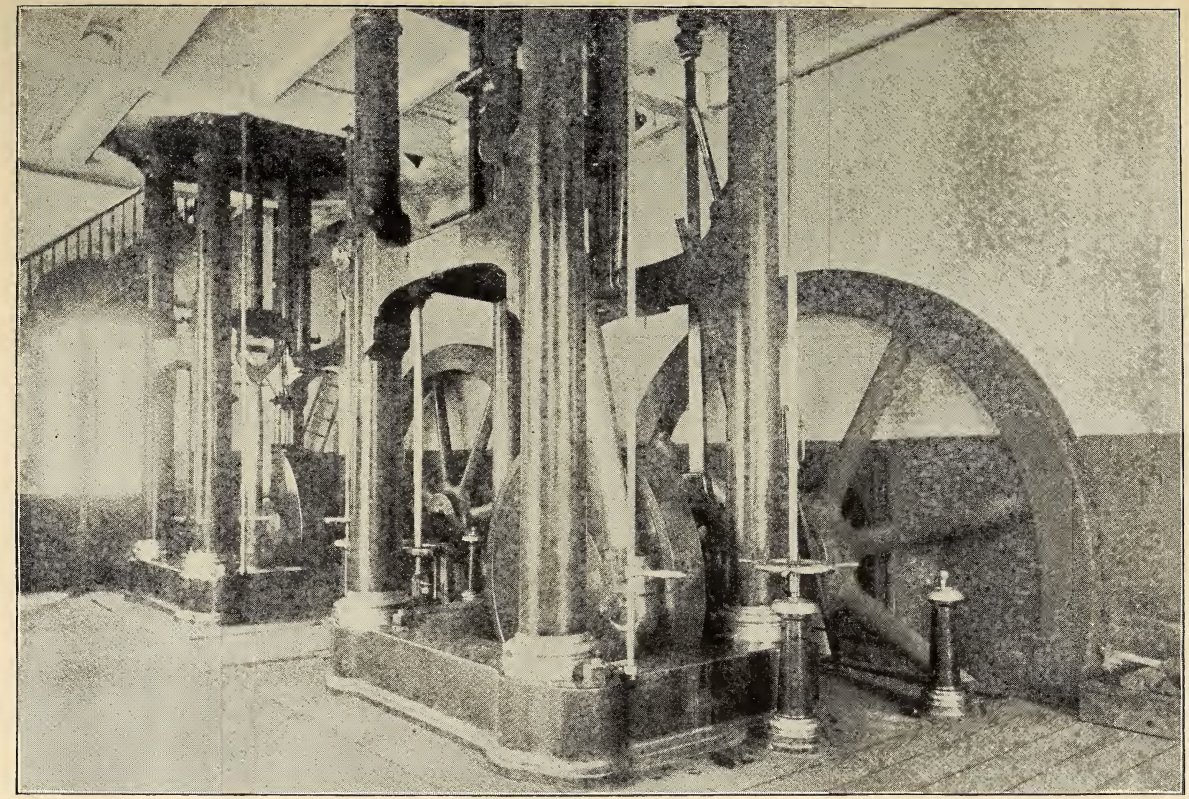


Mr. C. A. Meissner,

General Manager, Londonderry Iron Co., Londonderry, N.S.

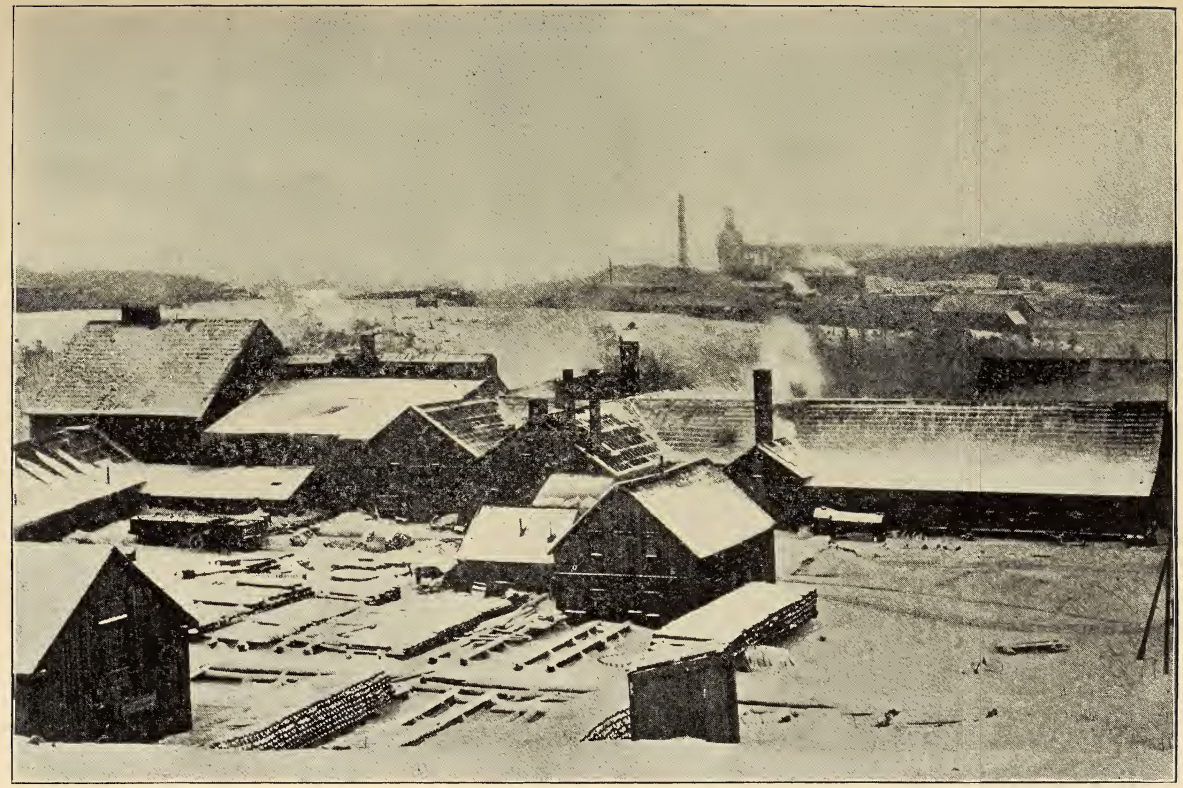
Mr. E. A. Sjostedt, M.E.

General Manager, Pictou Charcoal Iron Co., Bridgeville, N.S.

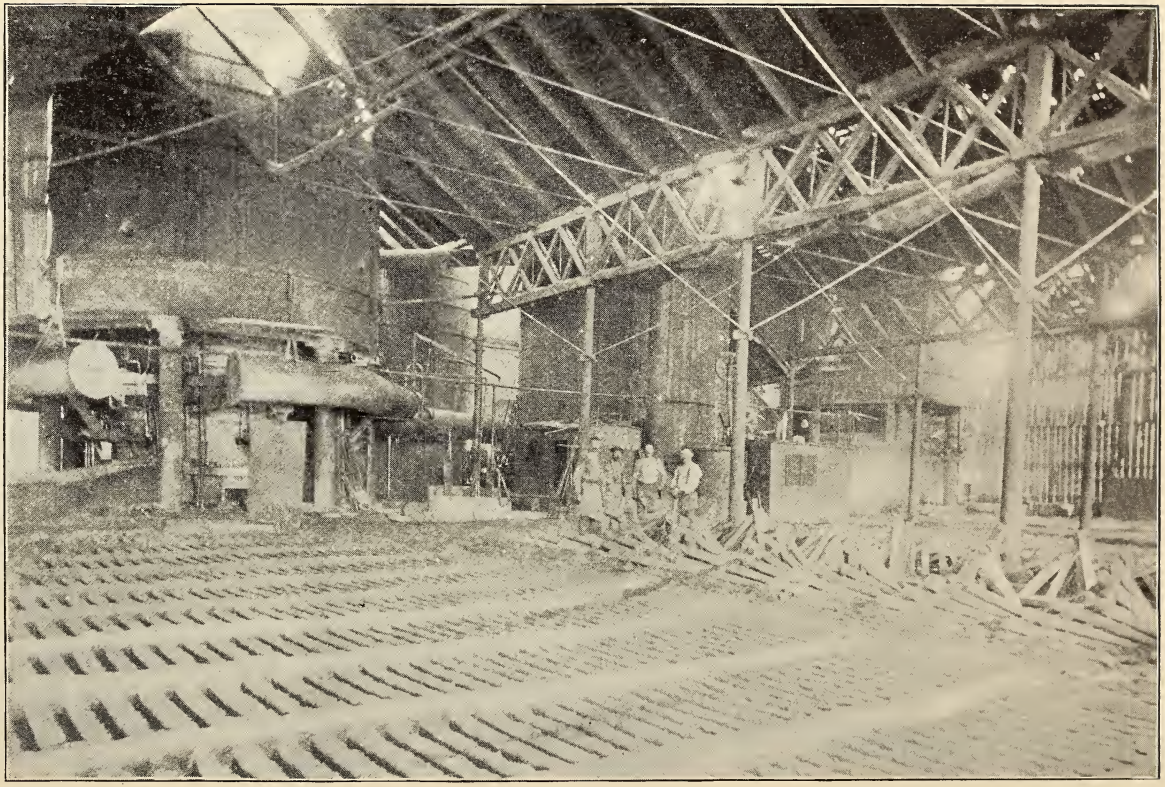


LONDONDERRY IRON CO.—Blowing Engines.

LONDONDERRY IRON CO.—Coke Ovens.



LONDONDERRY IRON CO.—Pipe Foundry and Pipe Yard.



LONDONDERRY IRON CO.—Interior of Cast House.

Mr. Harvey Graham,
Nova Scotia Steel Co., New Glasgow.

MR. GRAHAM FRASER,

Managing Director, Nova Scotia Steel Co., New Glasgow.

NOVA SCOTIA STEEL CO.—Shipping Pier at Company's Hematite Mine, Bell Island, Newfoundland.

Torbrook Iron Co.—Hematite Mine at Torbrook, N.S.

CAPE BRETON COPPER CO.—Mines at Coxheath, Cape Breton.

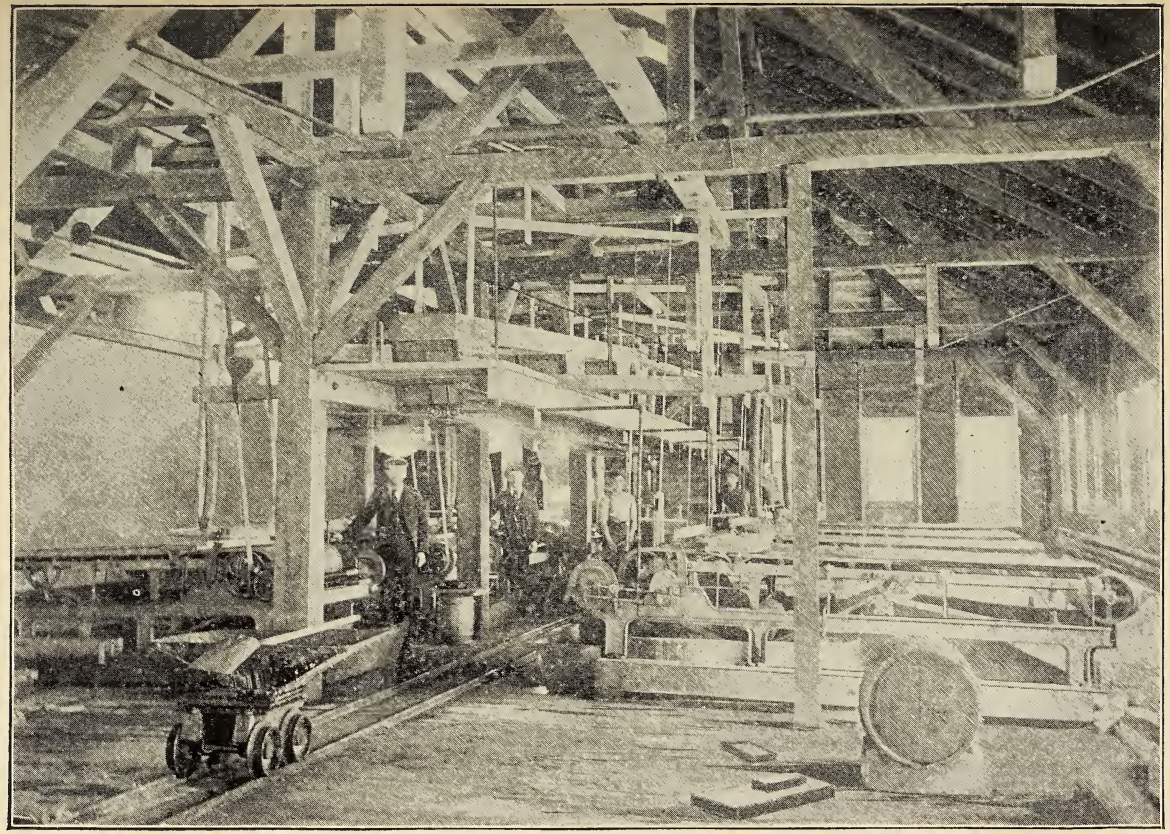
Capt. Isaac P. Gragg,

Managing Director, Cape Breton Copper Co., Boston.

WAVERLEY GOLD DISTRICT, HALIFAX COUNTY, N.S.

Chlorination House. Furnace. Shed for Chlorination. New 20-Stamp Mill. Old Mill.

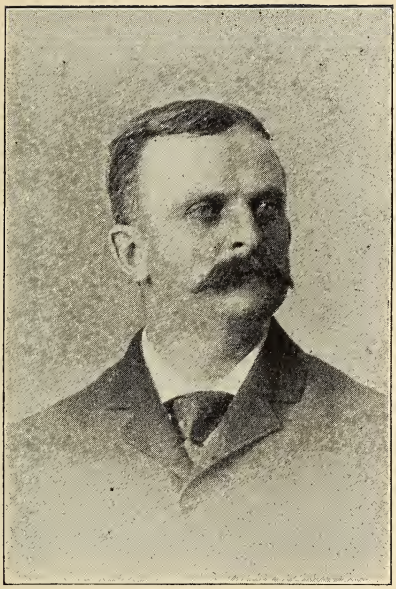
BROOKFIELD MINING CO.—Milling and Chlorination Plant at North Brookfield, Queens Co., N.S.



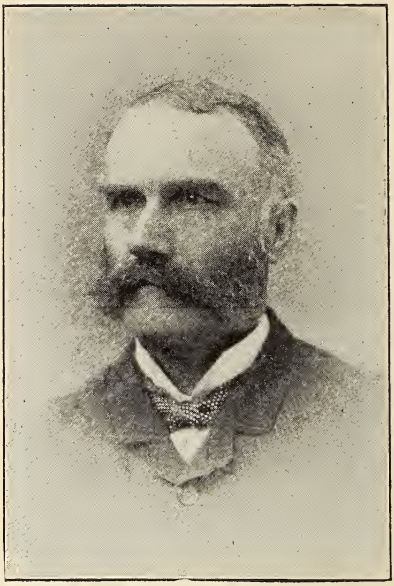
BROOKFIELD MINING CO.—Concentrating Room, North Brookfield.

New 20-Stamp Mill. Furnace House. Chlorination House.

BROOKFIELD MINING CO.—Chlorination Works at North Brookfield, Queen's Co., N.S.



Mr. Wilbur L. Libbey,
Brookfield Mining Co., North Brookfield, N.S.



Mr. H. F. Harding,
Brookfield Mining Co., North Brookfield, N.S.

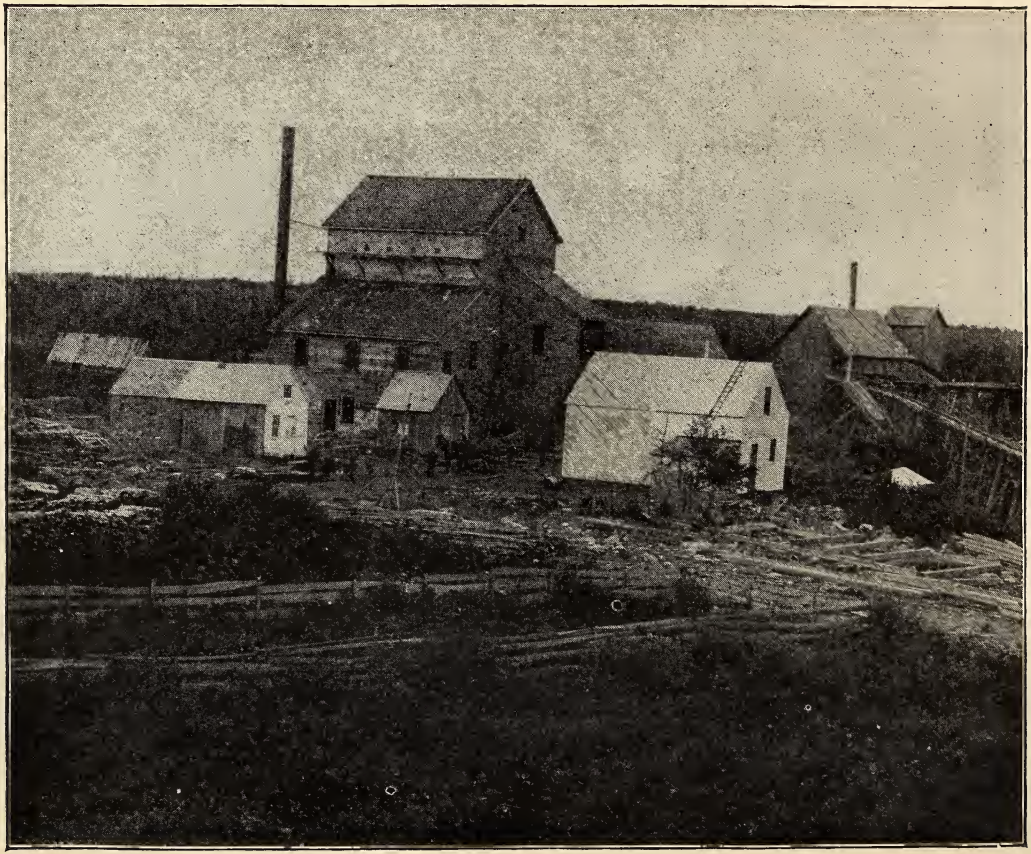
RICHARDSON GOLD MINING CO.—40-Stamp Mill at Country Harbor.

RICHARDSON GOLD MINING CO.—Shaft House and other Works at Country Harbor.

RICHARDSON GOLD MINING CO.—Face East Tunnel ; width 20 feet.

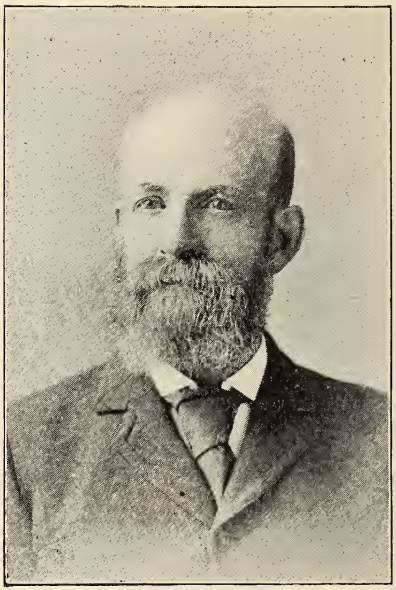
BLUENOSE GOLD MINING CO.—20-Stamp Battery at Goldenville, N.S.

BLUENOSE GOLD MINING CO.—Shaft House and other Works at Goldenville, N.S.



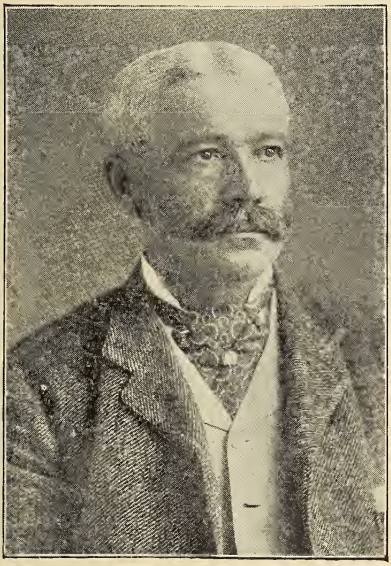
New Egerton Gold Mining Co.—New 30-Stamp Mill and old 15-Stamp Battery at 15-Mile-Stream, N.S.

New Egerton Gold Mining Co.—Main Shaft, 15-Mile-Stream, N.S.



J. D. McGregor,

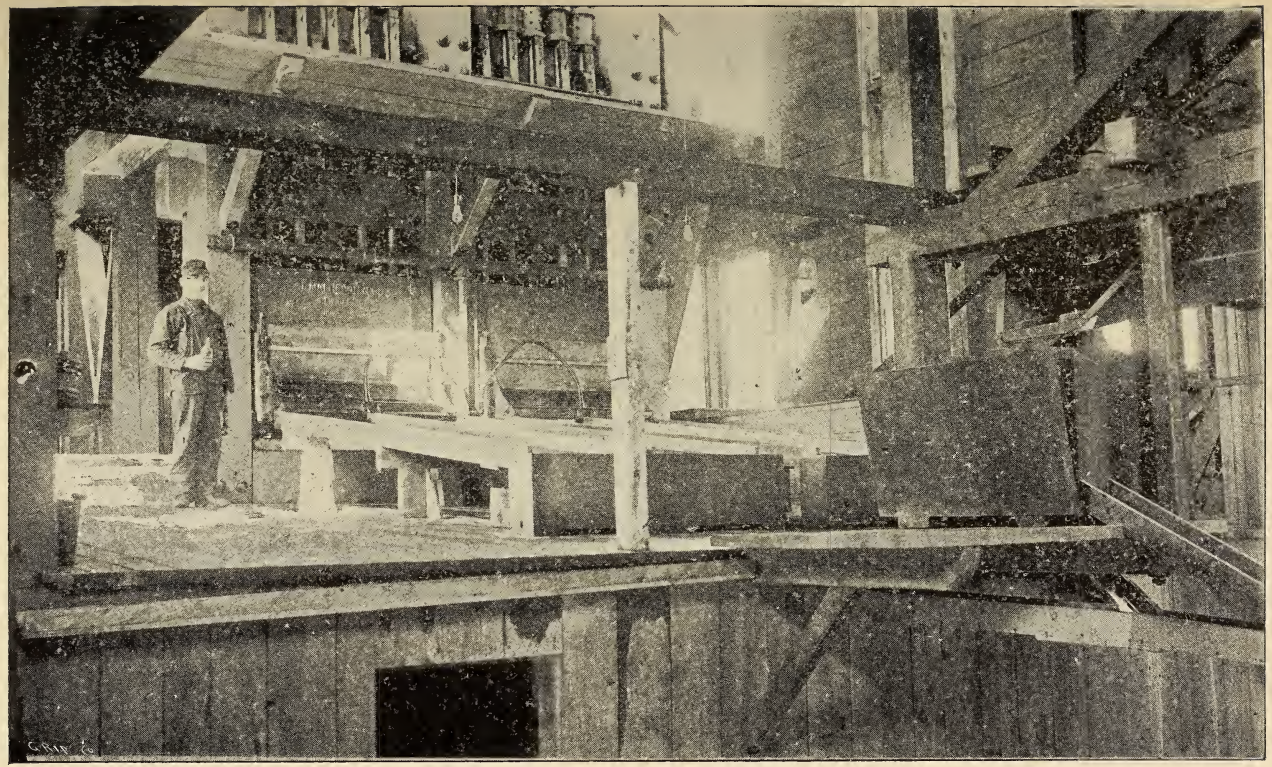
New Egerton Mining Co., New Glasgow, N.S.



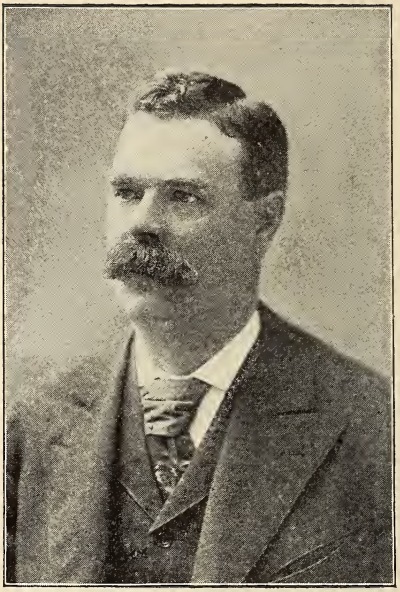
MAJOR R. G. LECKIE,

Managing Director, Dufferin Gold Mine, Torbrook, N.S.

LAKE LODE GOLD MINE—Mill and Shaft House, Caribou, N.S.



LAKE LODE GOLD MINE—Interior of 10-Stamp Battery.



Mr. W. A. Sanders,
Lake Lode Gold Mine, Caribou, N. S.

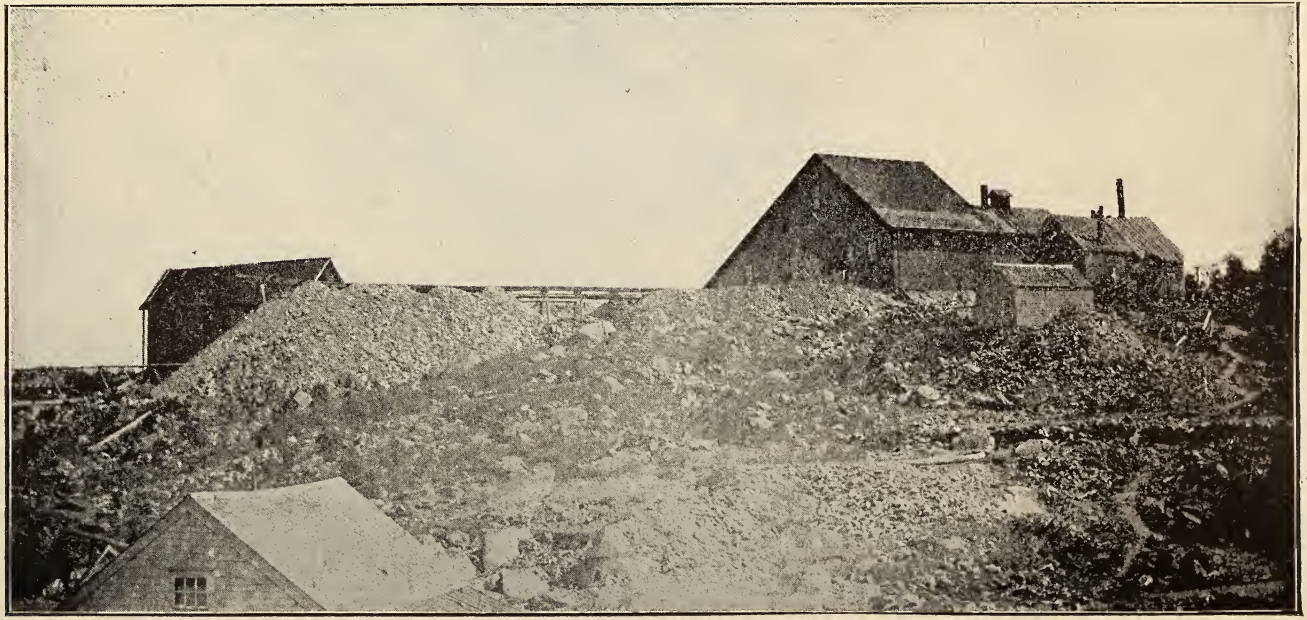
Mr. Joseph Austen,
Empress Gold Mine, Renfrew, N.S.

GOLDEN LODE MINING CO.—Mill at Uniacke, N.S.

GOLDEN LODE MINING CO.—Surface Works at Uniacke, N.S.

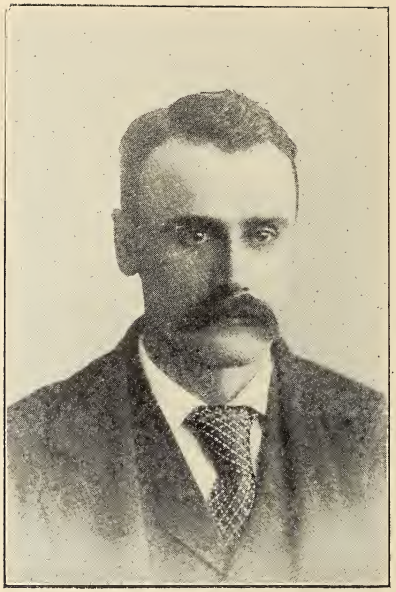
Mr. C. E. Willis, M.E.
Halifax, N.S,

GOLDEN GROUP MINING CO.—Mill at Montague, N.S.



TUDOR GOLD MINING CO.—Shaft House, Waverley, N.S.

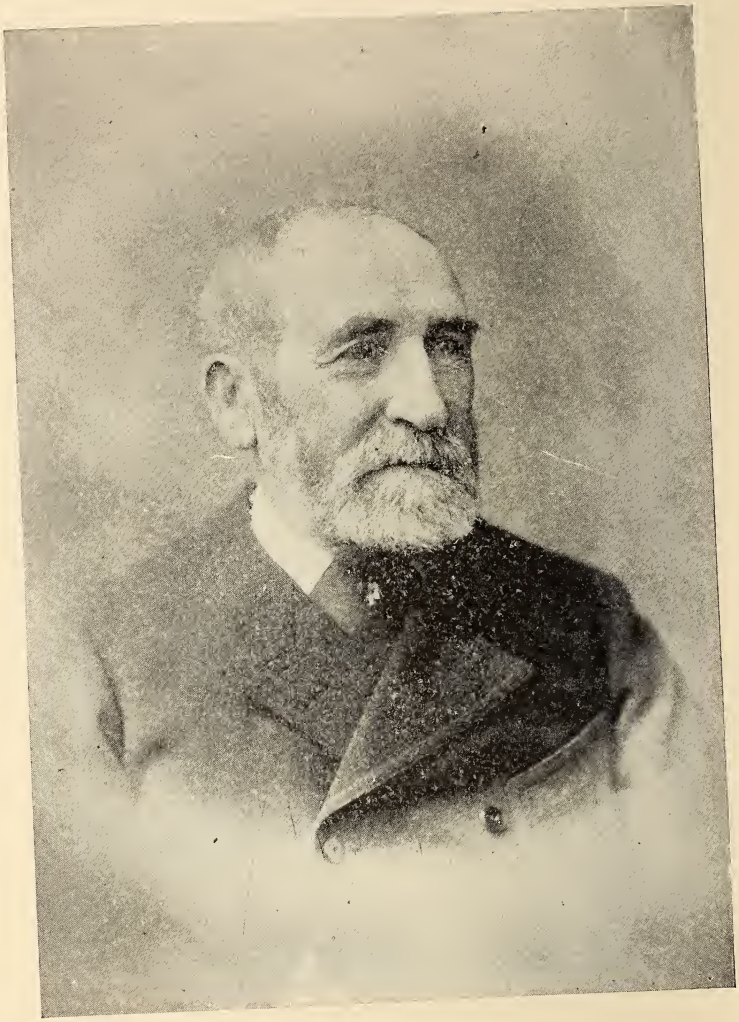
OLDHAM GOLD CO.—10-Stamp Mill at Oldham, N.S.



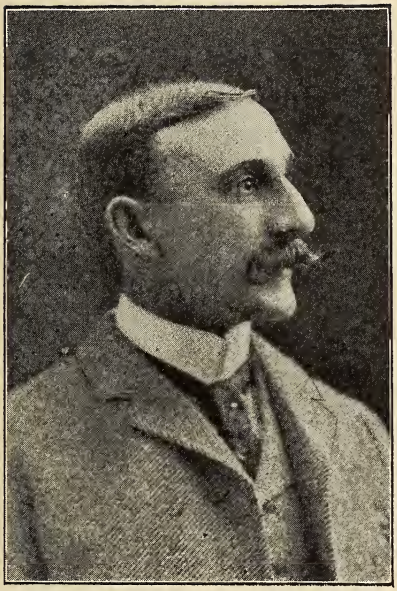
Mr. W. H. Prest,

Managing Director, Blockhouse Gold Mining Co.

Mr. F. H. Mason, F.C.S,
Halifax.



Mr. Damas Touquoy,
Caribou, N.S.



Mr. J. R. Cowans, General Manager,
Cumberland Railway and Coal Co. Ltd., Springhill, N.S.

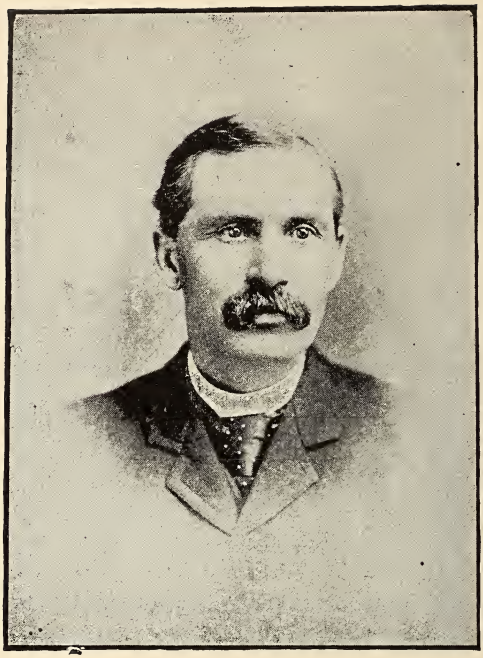
WENTWORTH GYPSUM CO.—Cable Towers and Hoisting Plant at Quarries.

WENTWORTH GYPSUM CO.—Quarries at Wentworth, N.S.

PROVINCE OF QUEBEC.

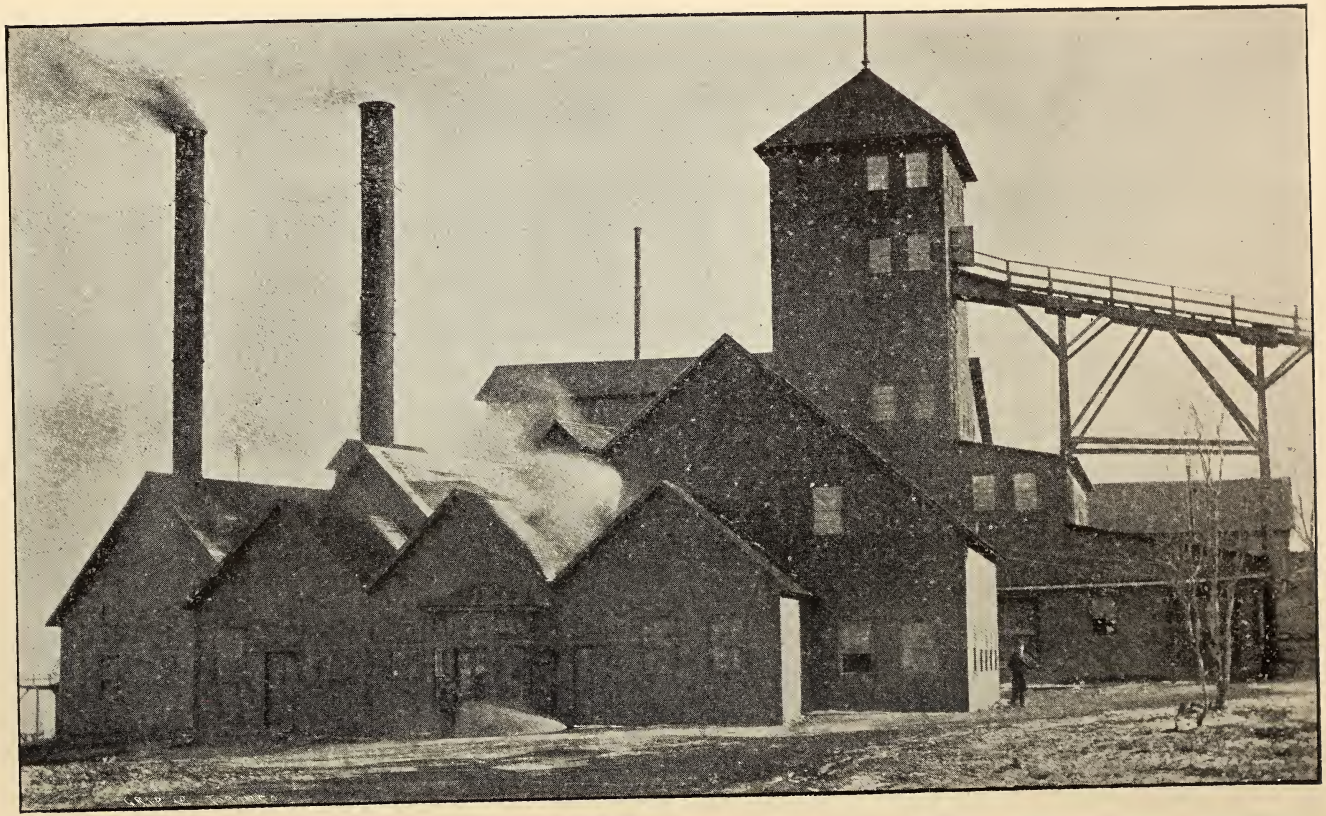
Mr. J. Obalski, M.E., Quebec,
Inspector of Mines.

EUSTIS MINING CO.—Surface Works at Eustis Pyrites Mine.

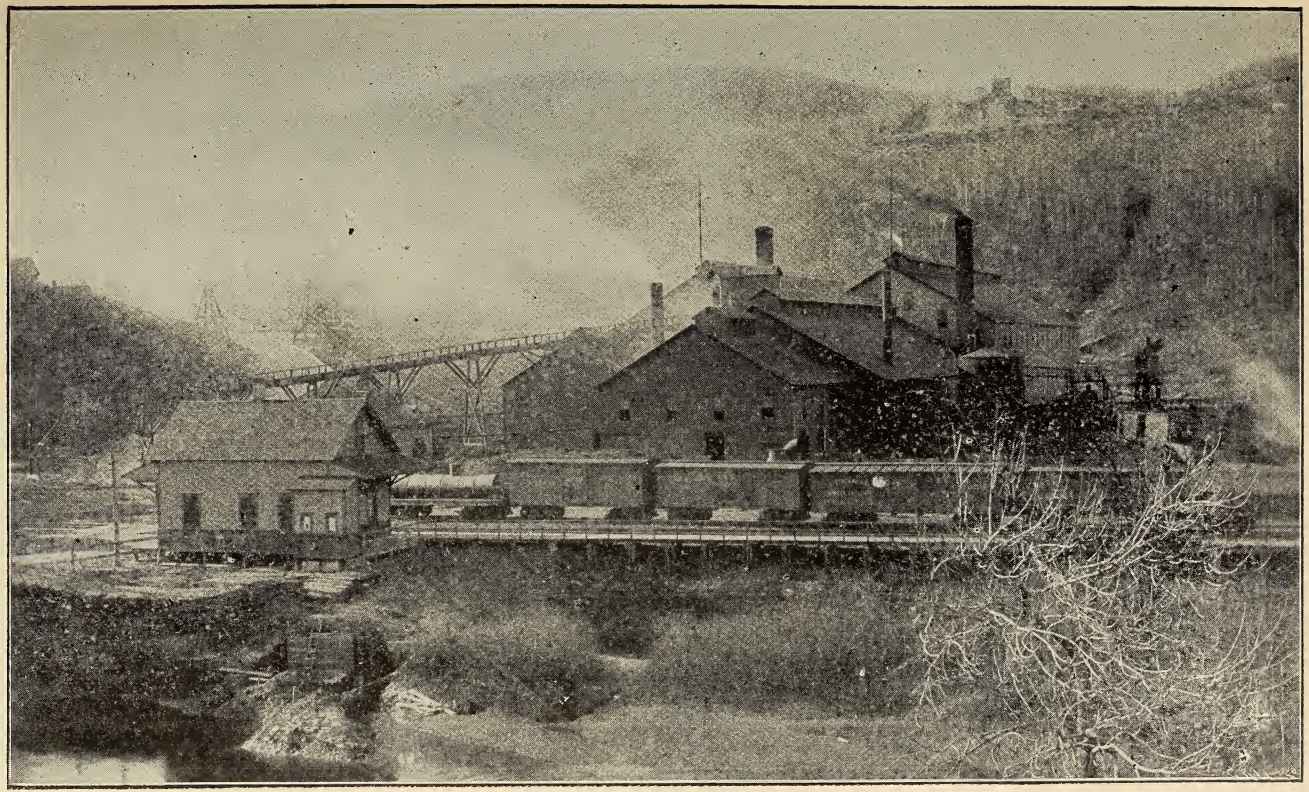


Mr. John Blue, C. & M. E.
Eustis Mining Company, Eustis, Que.

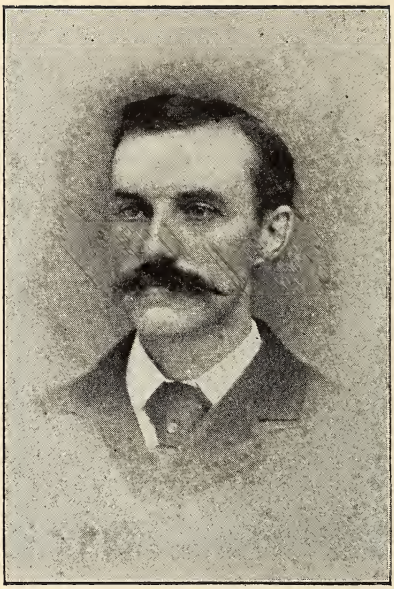
NICHOLS CHEMICAL CO.—No. I, II and III Shafts, Albert Mines, Capelton, Que.



NICHOLS CHEMICAL CO.—Concentrating Mill, Capelton.



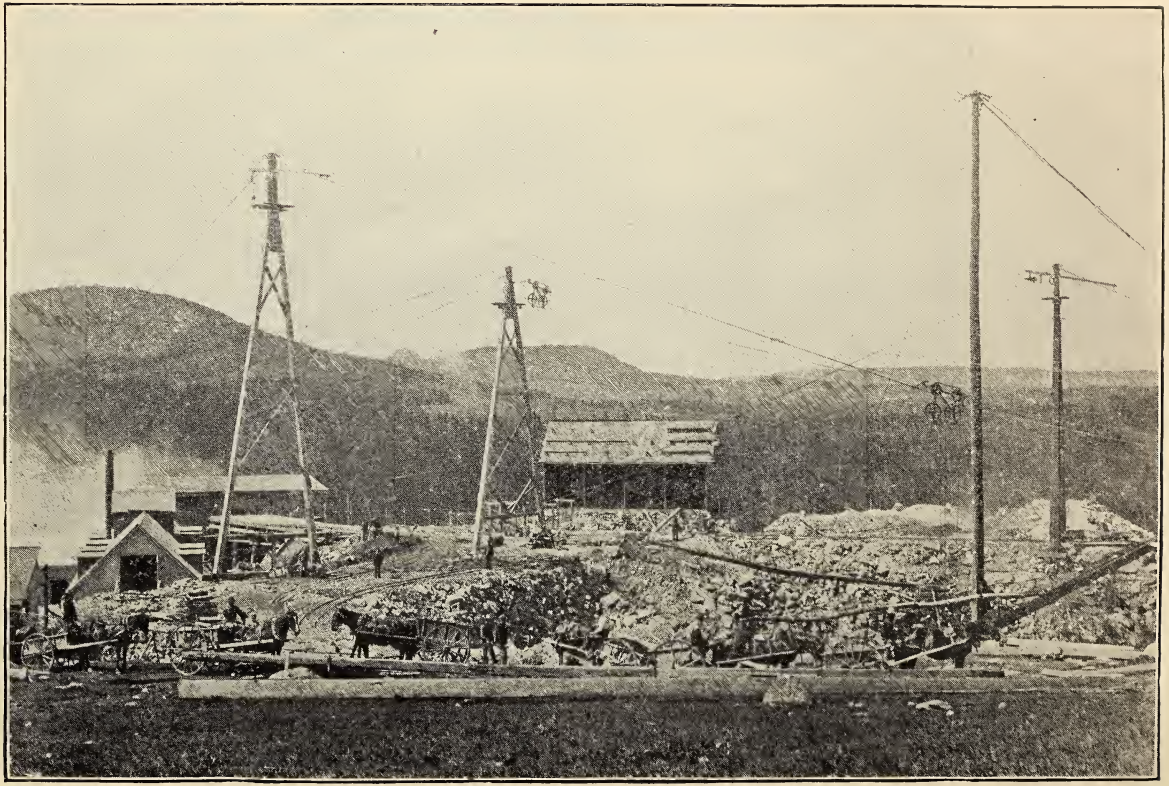
NICHOLS CHEMICAL CO.—Chemical and Fertilizer Works at Capelton.



Mr. S. L. Spafford,

General Manager, Nichols Chemical Co., Capelton, Que.

ASBESTOS AND ASBESTIC CO.—Factory at Danville, Que.



ASBESTOS AND ASBESTIC CO.—Surface Works at Danville Mine.

Bell's Asbestos Co.—Interior of Main Pit, Thetford Mines, Que.

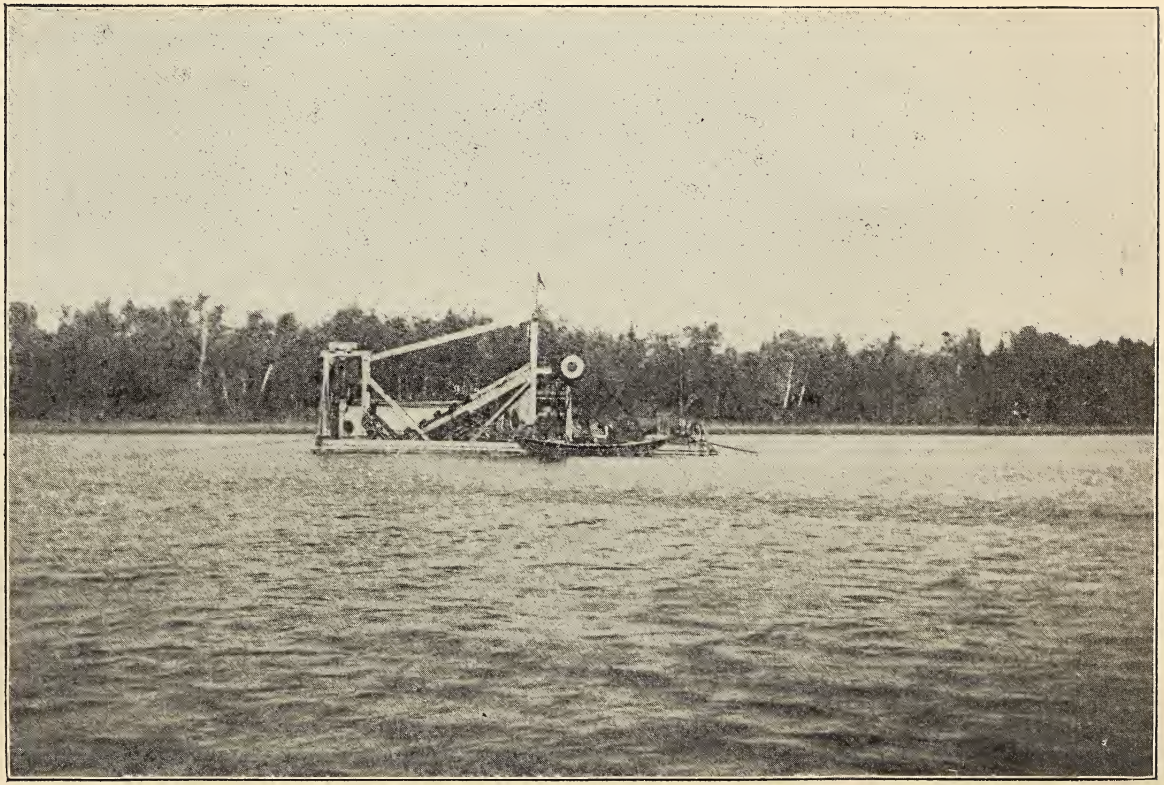
Mr. George R. Smith, M.L.A.

Manager, Bell's Asbestos Co., Thetford Mines, Que.

Mr. John J. Penhale,
Manager, United Asbestos Co., Black Lake.

Mr. L. A. Klein, M.E.
Black Lake, Que.

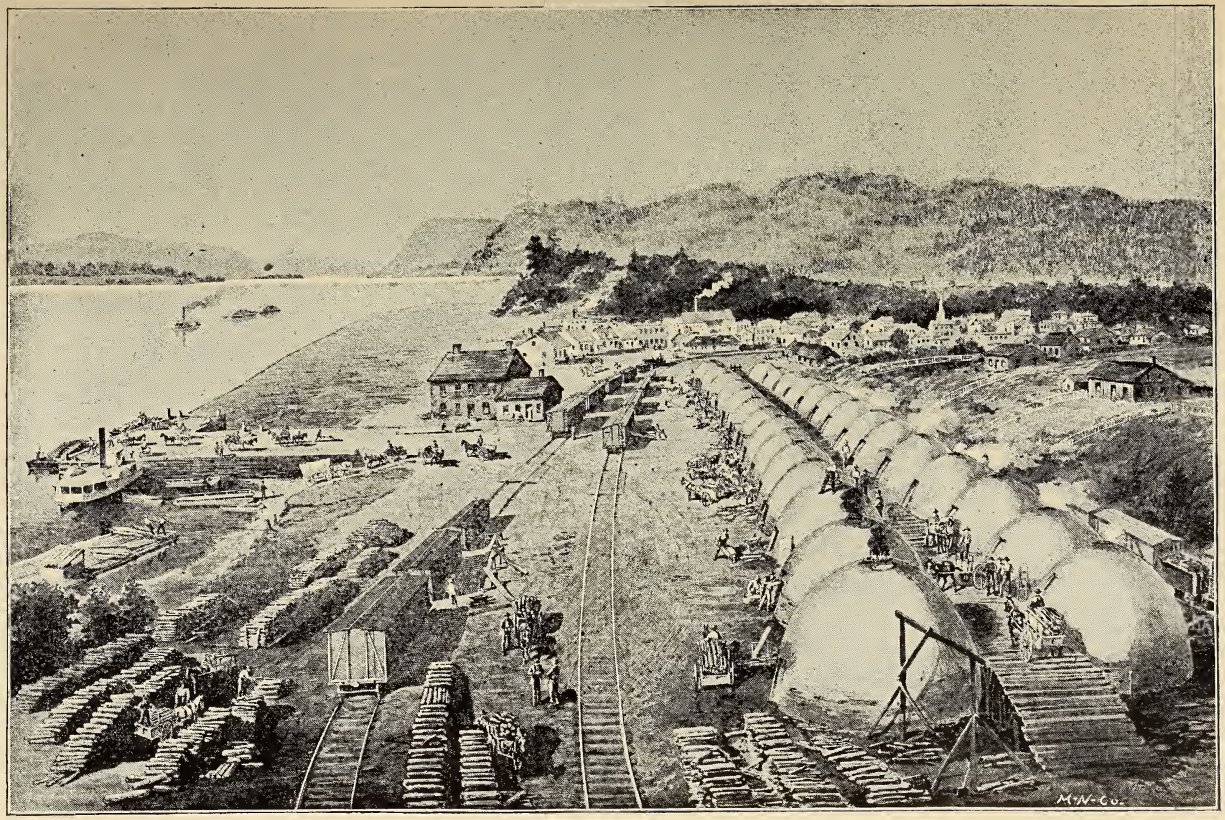
BELL'S ASBESTOS CO.—Mill at Thetford Mines, Que.



CANADA IRON FURNACE CO.—Dredging for Bog Ore on Lac-a-la-Tortue, Champlain Co., Que.

Mr. George E. Drummond (Canada Iron Furnace Co.)
President, Fed. Can. Mining Institute, Montreal.

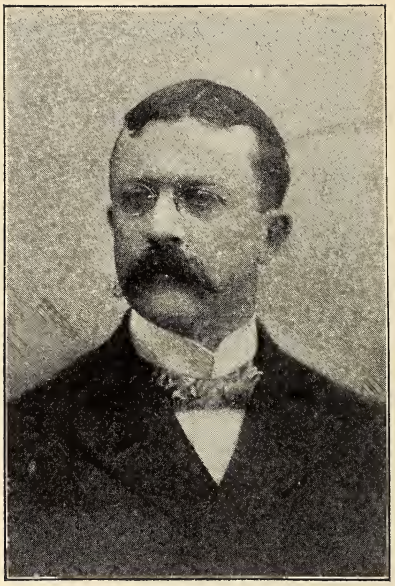
CANADA IRON FURNACE CO.—Dredging for Bog Ores on Lac-a-la-Tortue, Que.



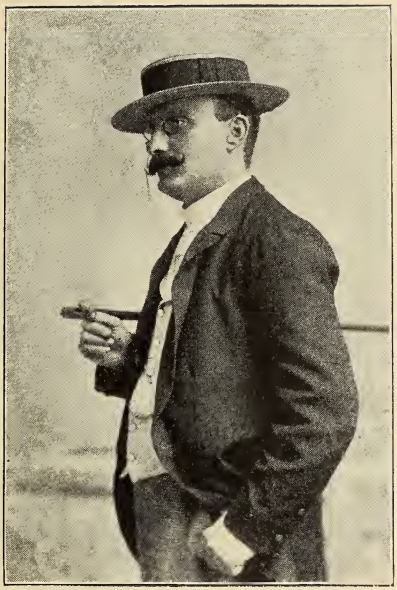
CANADA IRON FURNACE CO.—Charcoal Kilns at Grandes Piles, Que.

Mr. T. P. Bacon,
New Rockland Slate Co., Montreal.

Mr. E. Wallingford,
Wallingford Mica Co., Templeton.

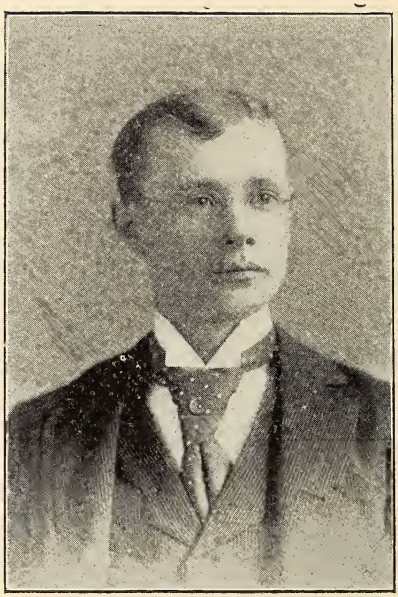


Mr. H. P. H. Brumell,
North American Graphite Co., Ottawa.

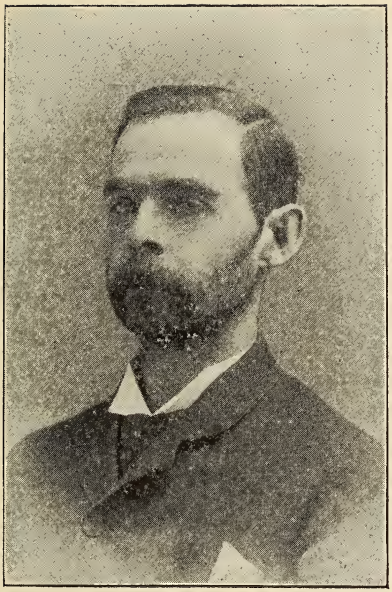


Mr. F. Cirkel, M.E.

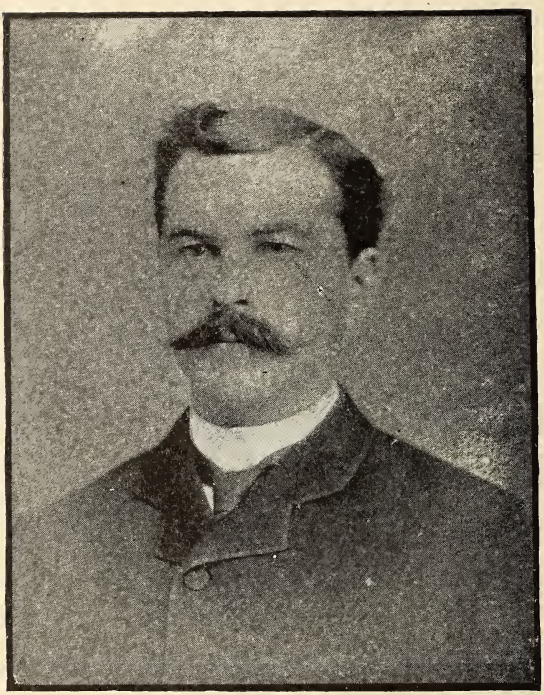
Ottawa.



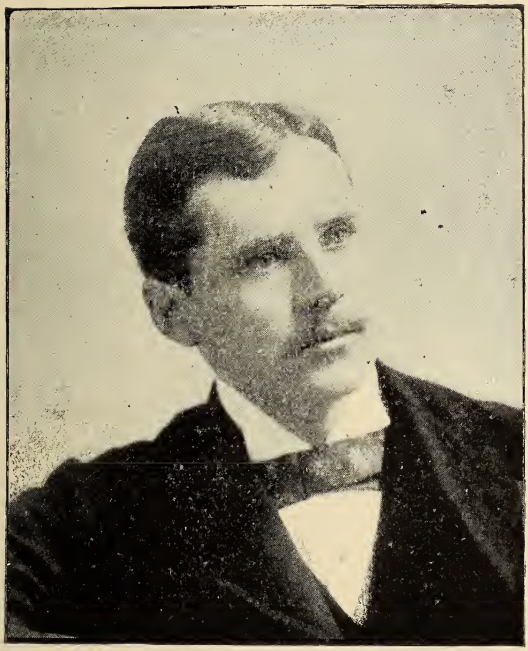
Mr. Milton Hersey, B.A.Sc.
Analytical Chemist, Montreal.



Mr. J. T. Donald, M.A.
Analytical Chemist, Montreal.



Mr. James S. Mitchell,
Beaver Asbestos Co., Sherbrooke, Que.



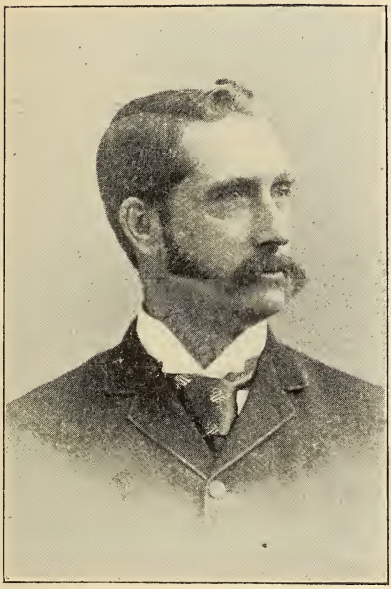
Mr. John M. Jenckes,
(Jenckes Machine Co.), Sherbrooke, Que.

Asbestos Mining at Black Lake, Que.

WALLINGFORD MICA CO.—Pits at Templeton, Que.

Hon. A. Tourgeon, M.L.A.

Commissioner of Mines, Province of Quebec.



Mr. R. T. Hopper,
Anglo-Canadian Asbestos Co., Montreal.

Mr. John J. Drummond,

Superintendent, Canada Iron Furnace Co., Radnor Forges, Que.

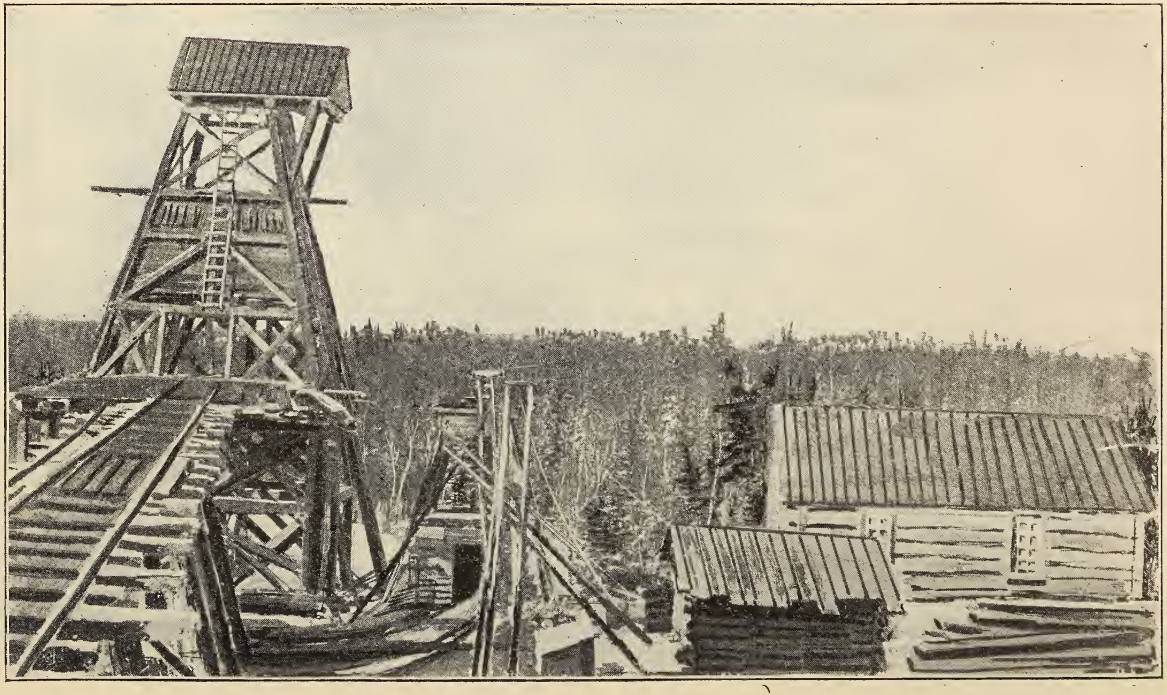
PROVINCE OF ONTARIO.

Sultana Gold Mine and Surface Works, Sultana Island, Lake of the Woods, Ont.

REGINA (CANADA) GOLD MINE, LTD.—Mine at Whitefish Bay, Lake of the Woods, Ontario.

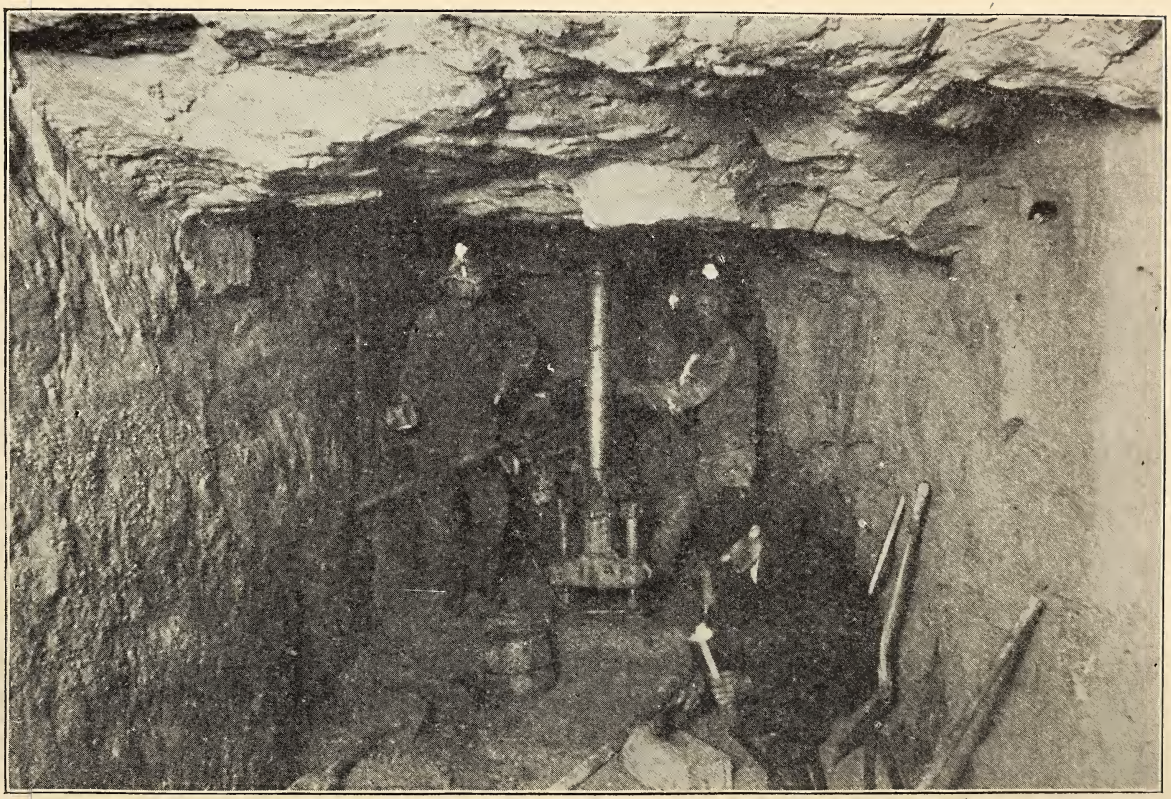
DOMINION GOLD MINING AND REDUCTION CO.—Works at Rat Portage, Ont.

FOLEY MINES CO. OF ONTARIO.—20-Stamp Mill, Seine River, Ont.



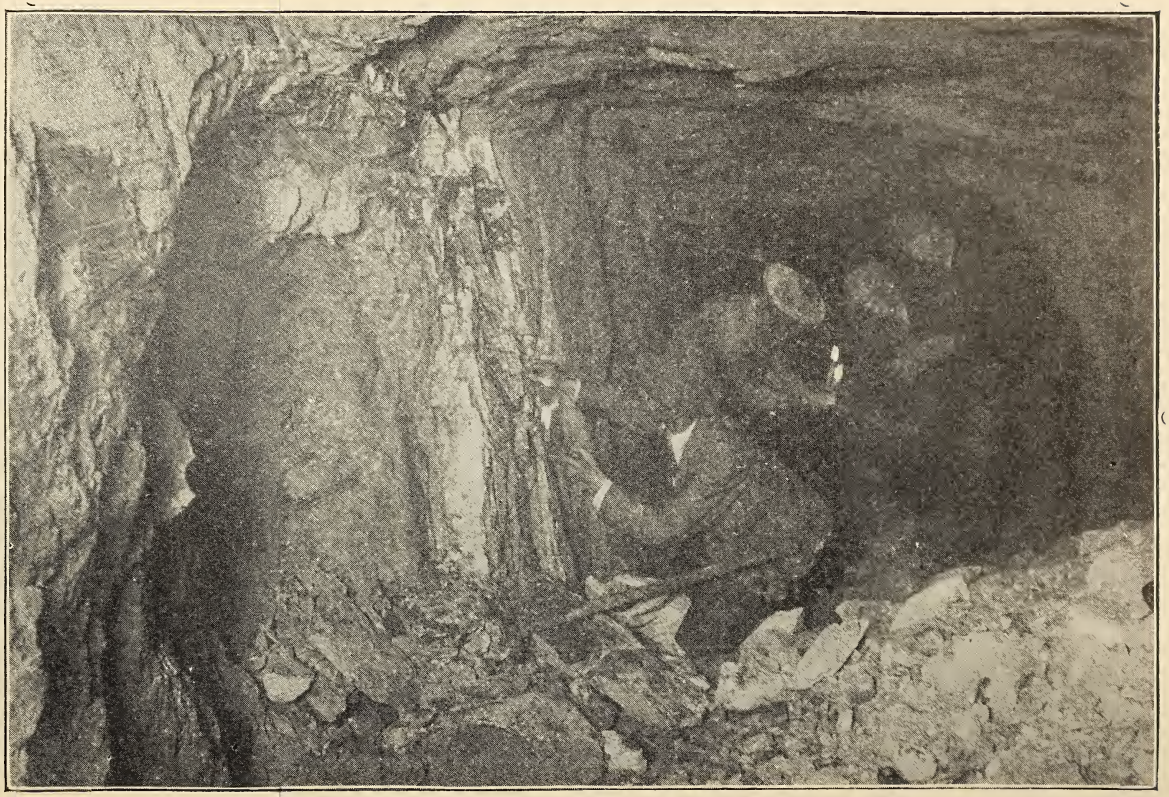
FOLEY MINES CO. OF ONTARIO—No. 5 Shaft, Bonanza Vein.

FOLEY MINES CO. OF ONTARIO.—No. 5 Shaft and other Works.



FOLEY MINES CO. OF ONTARIO.—Air Drill working in South Drift, 200 ft. level, North Shaft.

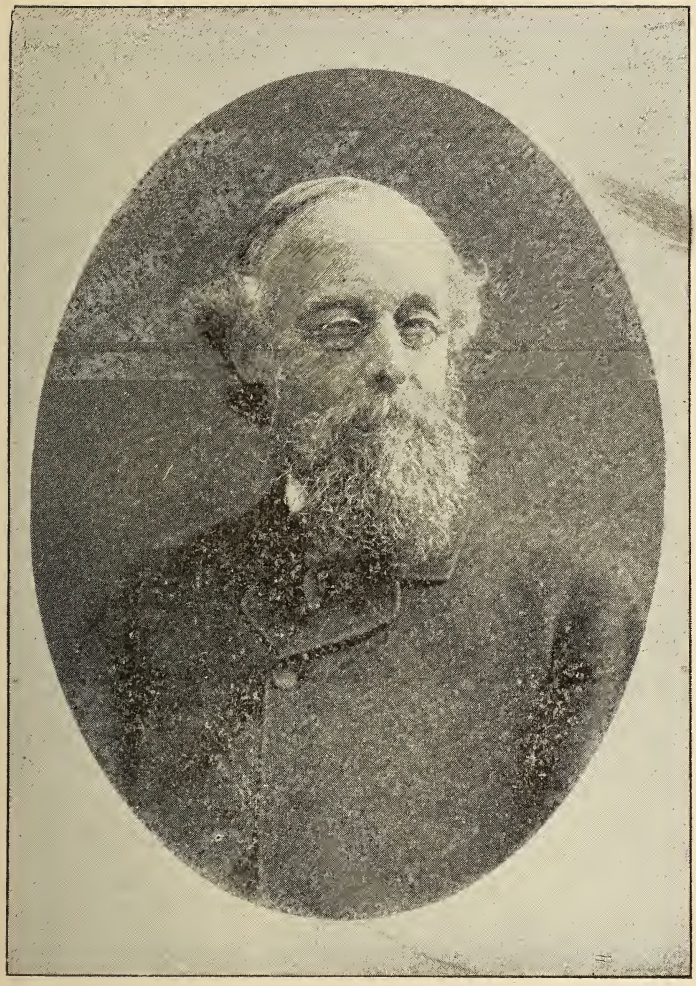
FOLEY MINES CO. OF ONTARIO.—Tramway, looking south from Bonanza Shaft.



FOLEY MINES CO. OF ONTARIO.—View taken after a Blast in North Drift, 150 ft. level, North Shaft.

FOLEY MINES CO. OF ONTARIO.—Outcrop No. 5 Vein, Location A. L. 74.

FOLEY MINES CO. OF ONTARIO.—No. 5 Shaft and Engine House.



Dr. A. R. C. Selwyn, C.M.G.

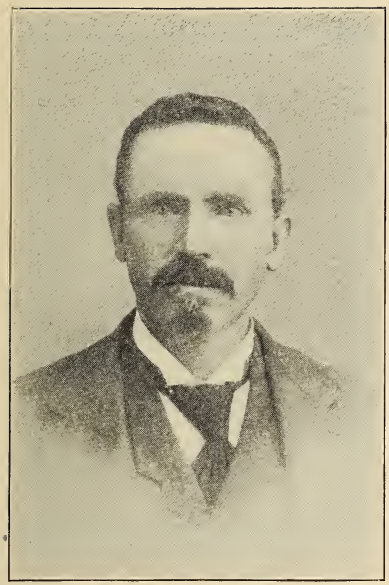
Director, Geological Survey of Canada, 1869 to 1895.

Dr. G. M. Dawson, C.M.G.

Appointed Director, Geol. Sur. of Can., January, 1895.

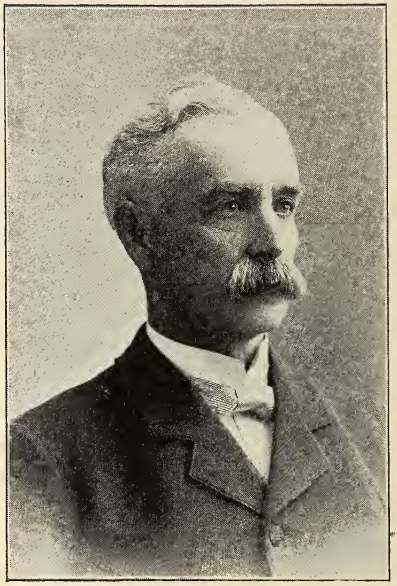
CANADIAN COPPER CO.—Roasting Nickel Ore at Copper Cliff, Sudbury, Ont.

CANADIAN COPPER CO.—Pile of Nickel Matte at Copper Cliff, Sudbury, Ont.



Mr. A. McArthur,

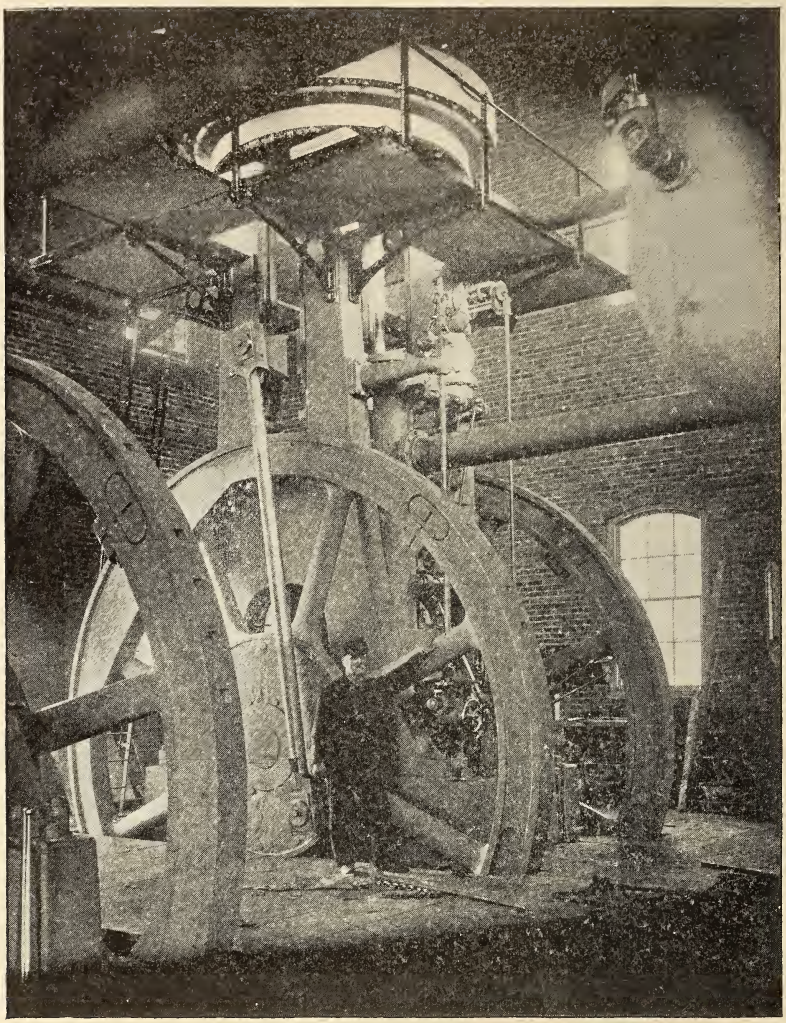
General Manager, Canadian Copper Co., Sudbury. Ont.



Mr. E. Doud,

Manager, Hamilton Blast Furnace Co., Hamilton, Ont.

HAMILTON BLAST FURNACE CO.—Showing portion of Cast House, Down Take, Dust Catcher, Stoves, Gas Main to Boilers, and Cold Blast Main.



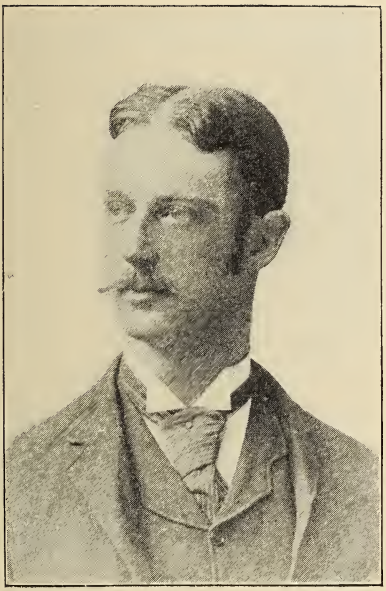
HAMILTON BLAST FURNACE CO.—One of the Blowing Engines.

Quarry of Lithographic Stone at Marmora, Ont.

JERKER IN THE PETROLIA OIL FIELD, ONT.

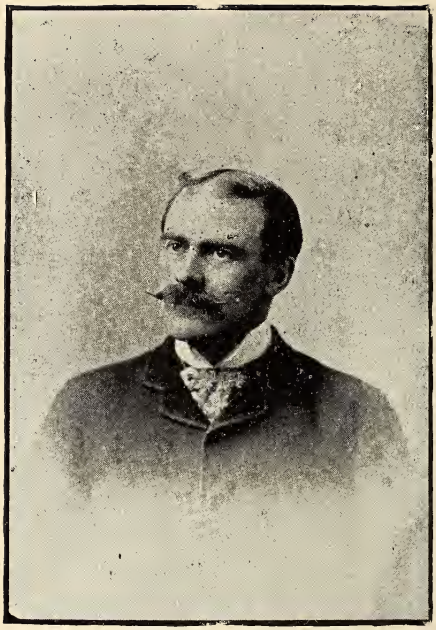
Shooting an Oil Well, Petrolia, Ont.

Imperial Oil Company's Stills at Petrolia, Ont.

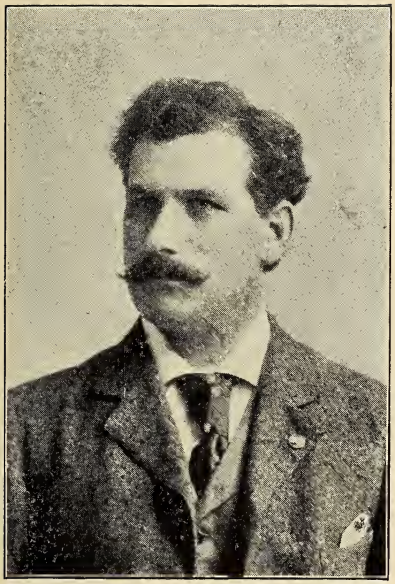


E. D. Ingall, Assoc. R.S.M.

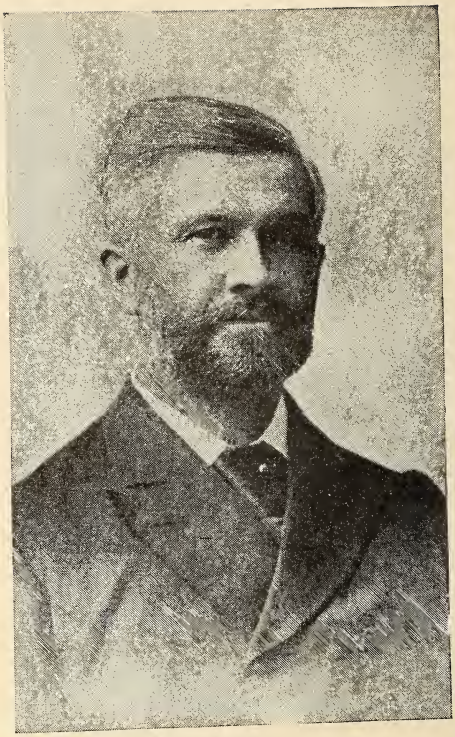
Chief, Division of Mineral Statistics, Geol. Sur. of Can., Ottawa.



W. Hamilton Merritt, A.R.S.M.
Consulting Mining Engineer, Toronto.



T. W. Gibson,
Bureau of Mines, Toronto.



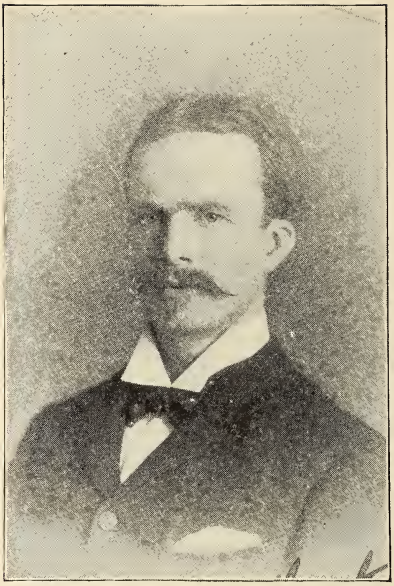
A. BLUE,

Director, Bureau of Mines, Toronto.

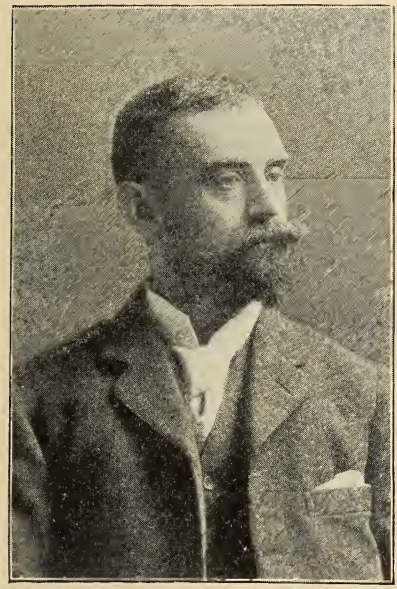
FOLEY MINES CO. OF ONTARIO.—After a Blast in South Drift, 200 ft. level, North Shaft.

Ten-Stamp Battery at Empress Mine, Jackfish, Ont.

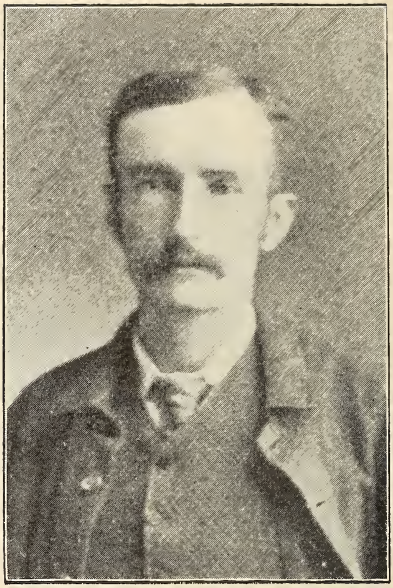
Outcrop of Vein, Saw-bill Lake Mine, Ont.



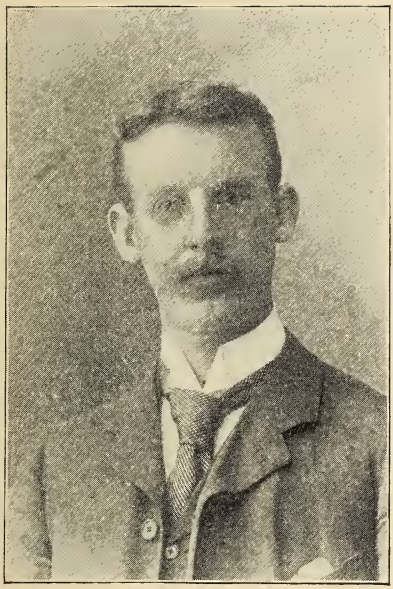
Mr. J. H. Chewett, B.A.Sc., C.E.
Toronto.



Mr. A. J. Swinney,
Canadian Gold Fields, Ltd., Deloro, Ont.



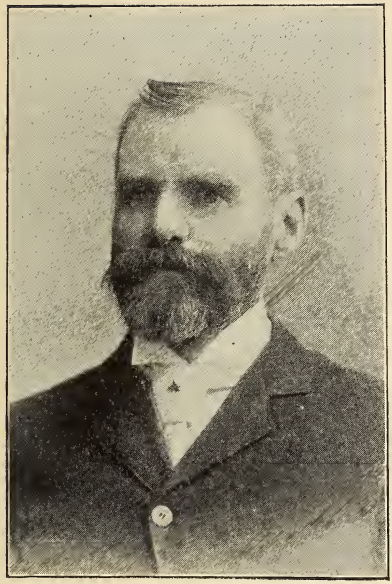
Mr. John F. Caldwell,
Sultana Gold Mine, Lake of the Woods, Ont.



Mr. John Leechman, Assoc. R.S.M.
Regina Gold Mine, Lake of the Woods, Ont.

Mr. J. Burley Smith, M.E.

Burley Gold Mining Co., Lake of the Woods, Ont.

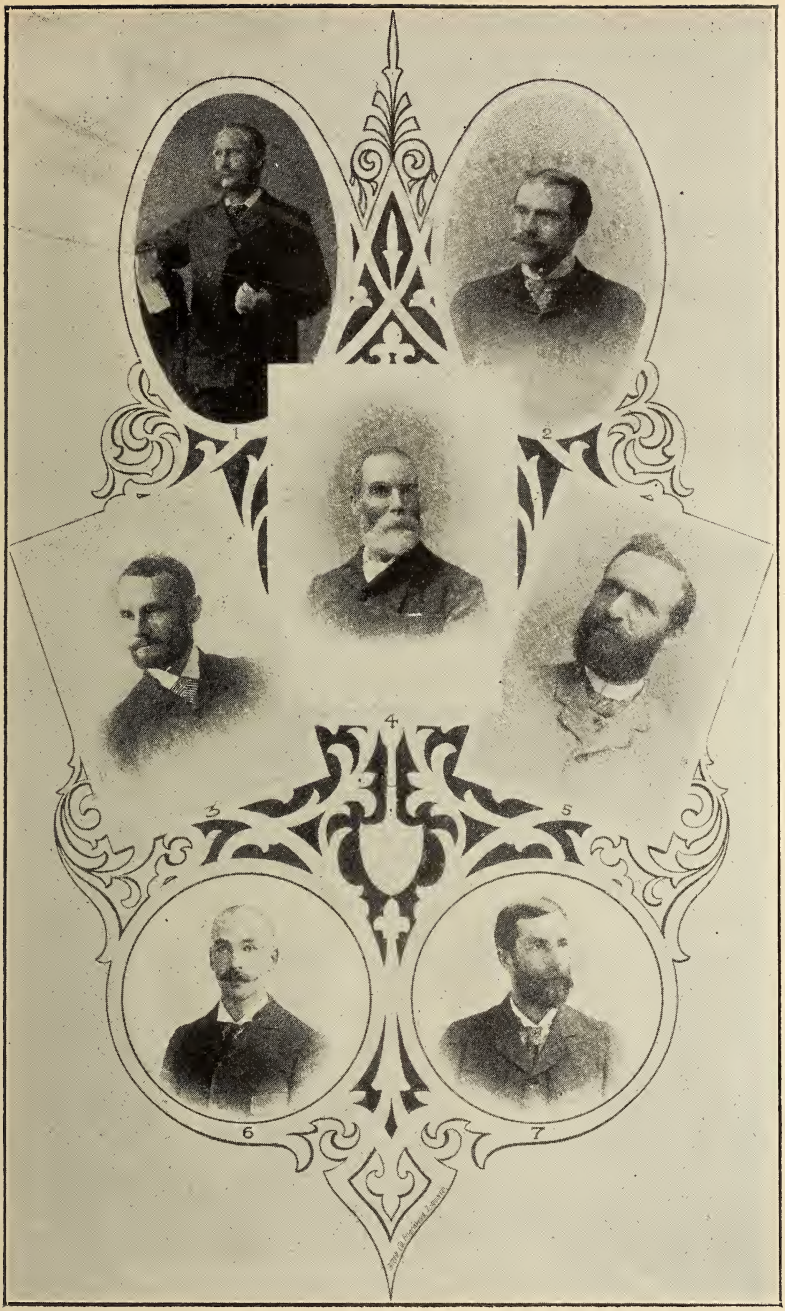


Mr. Wm. Peters,

Superintendent, Empress Gold Mine, Jackfish, Ont.

Mr. Theo. Briedenbach,

Mikado Gold Mining Co., Lake of the Woods, Ont.

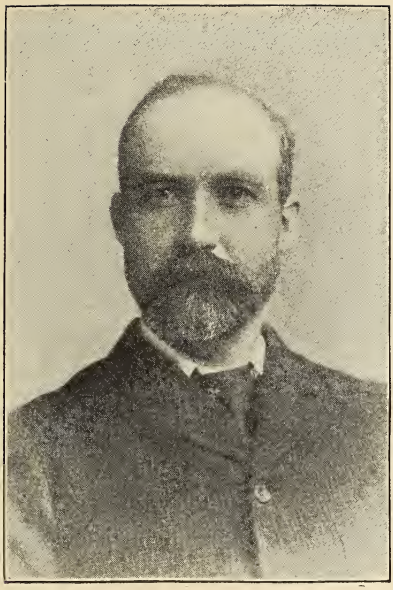


STAFF OF THE SCHOOL OF MINES, KINGSTON, ONT.

1 R. Carr Harris, C.E., Professor of Engineering.
2 W. Hamilton Merritt, M.E., A.R.S.M., Lecturer on Mining and Engineering.
3 Wm. Nichol, M.A., Professor of Mineralogy, Metallurgy and Assaying.
4 Wm. Mason, Lecturer on Drawing, Topography and Surveying.
5 Dr. W. L. Goodwin, B.Sc., F.R.S.C., Director and Professor of Chemistry.
6 T. L. Walker, M.A., Laboratory Demonstrator.
7 Willet G. Miller, B.A., Lecturer on Geology and Petrography.

DR. GOODWIN,

Director, School of Mining, Kingston, Ont.

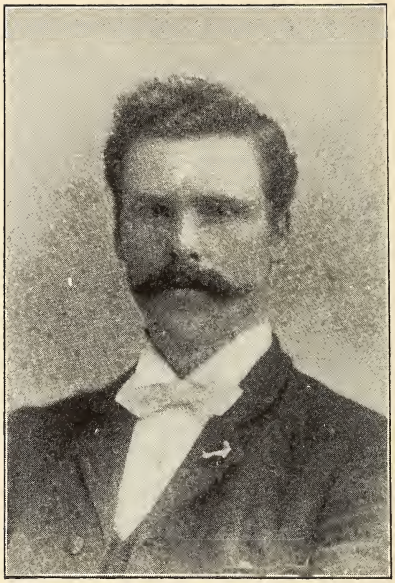


DR. A. P. COLEMAN,
School of Practical Science, Toronto.

Mr. F. Hille,

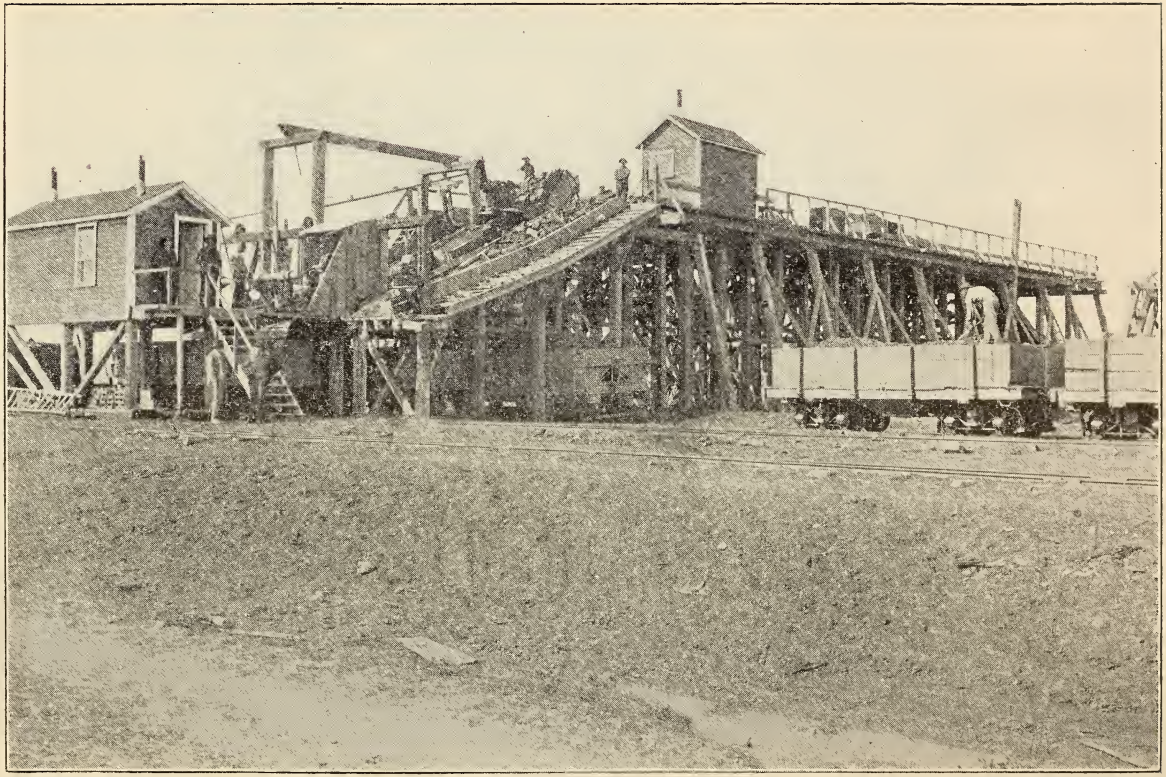
Consulting Mining Engineer, Port Arthur, Ont.

Mr. T. J. Watters,
Mica Manufacturing Co. Ltd., Ottawa, Ont.

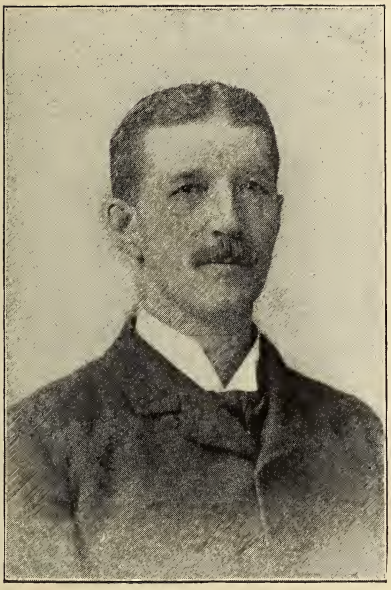


MR. A. E. DOIDGE,
Mikado Gold Mine, Lake of the Woods, Ont.

NORTH-WEST TERRITORIES.



ALBERTA RAILWAY AND COAL CO.—Bankhead at Lethbridge, N.W.T.



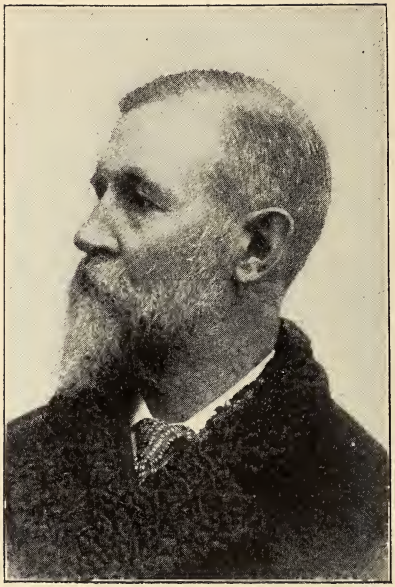
Elliot P. Galt,

Managing Director, Alberta Ry. and Coal Co. Ltd., Lethbridge, N.W.T.

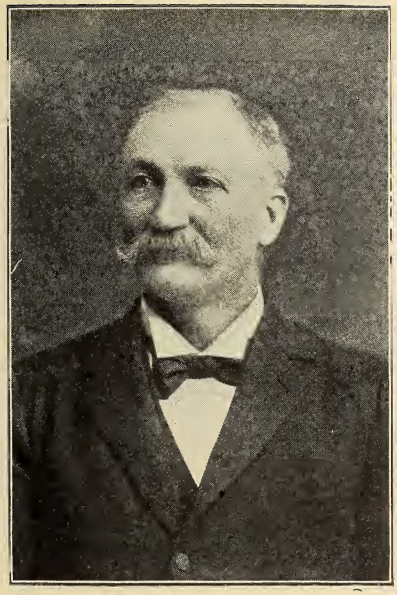
H. W. McNeill Co.—Anthracite Colliery.

H. W. McNeill Co.—Mines at Canmore, Alta.

PROV. OF BRITISH COLUMBIA.

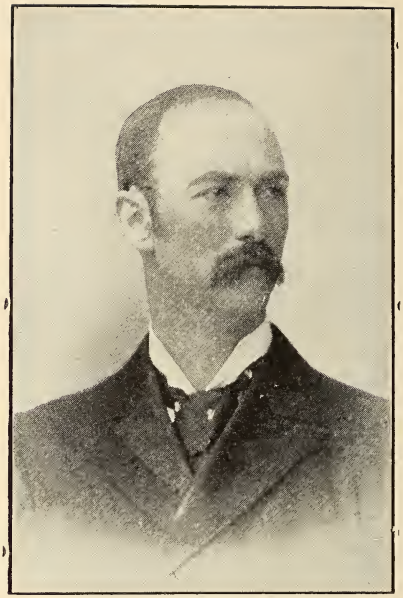


HON. COL. JAMES BAKER,
Minister of Mines, Province of British Columbia.



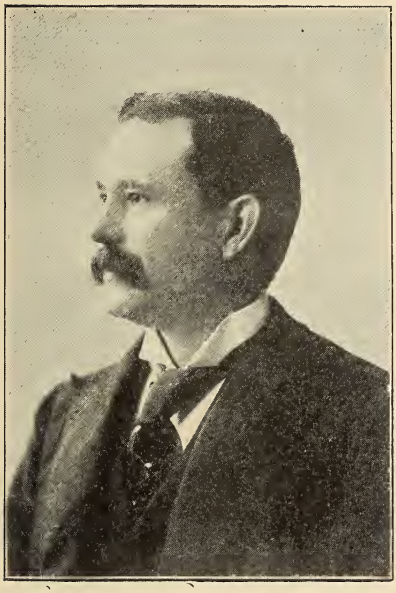
Mr. John B. Hobson, M.E.

Gen. Manager, Cariboo Hydraulic Mine, Quesnelle, B.C.



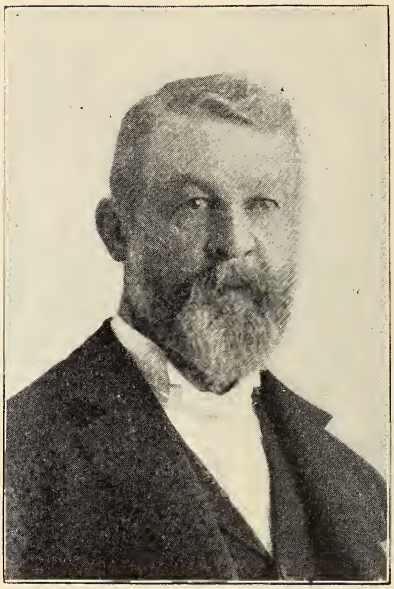
Mr. J. B. Hastings, E.M.

Manager, War Eagle Consolidated Gold Mining Co., Rossland, B.C.



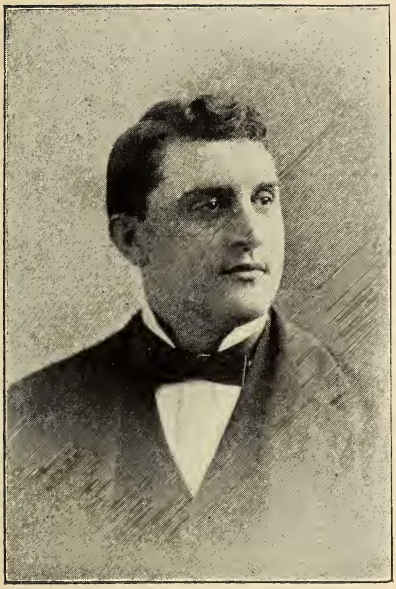
HON. GEORGE TURNER,

Managing Director, Le Roi Mining and Smelting Co., Rossland, B.C.



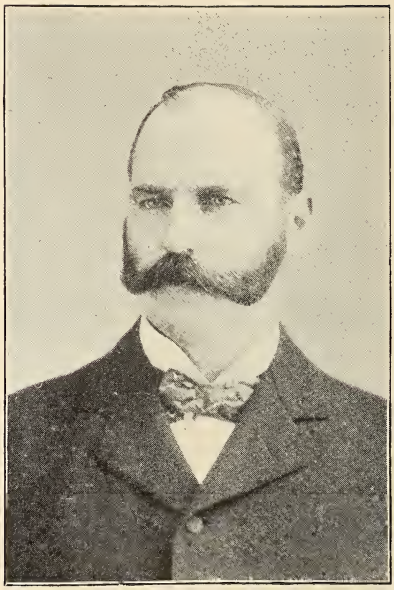
MR. OLIVER DURANT,

Managing Director, Centre Star Mining and Smelting Co., Rossland, B.C.



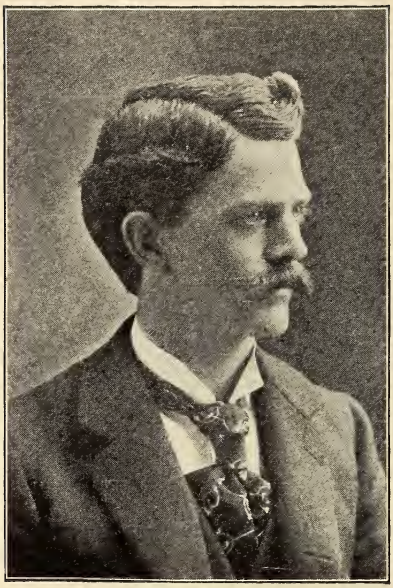
Mr. F. A. Heinze,

Managing Director, B. C. Smelting and Refining Co., Trail.

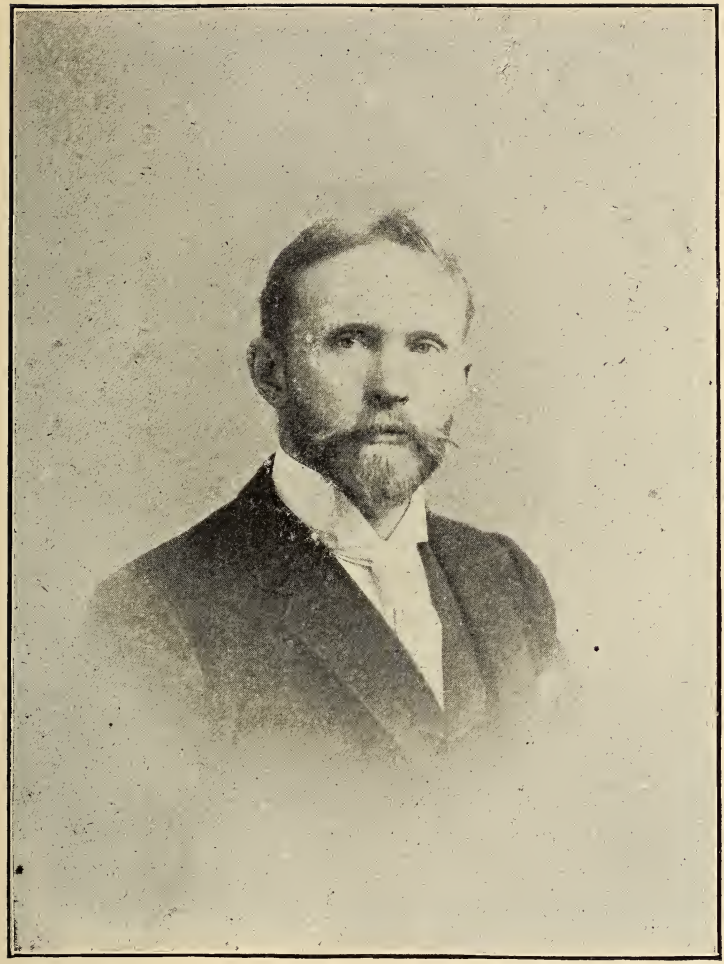


Mr. C. W. Callahan, M.E.
Galena Mines, Ltd.

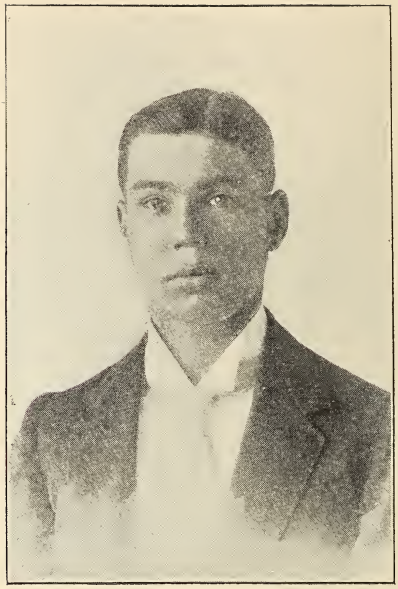
Mr. H. E. Croasdale,
General Manager, Hall Mines, Ltd., Nelson, B.C.



Mr. J. M. Harris,
Reco Mining and Milling Co., Sandon, B.C.



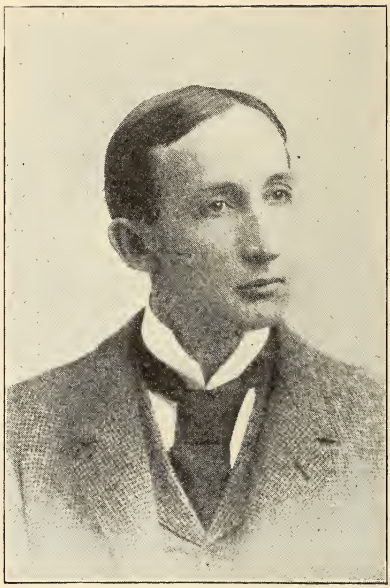
Mr. W. Carlyle, M.E.
Provincial Mineralogist, Victoria, B.C.



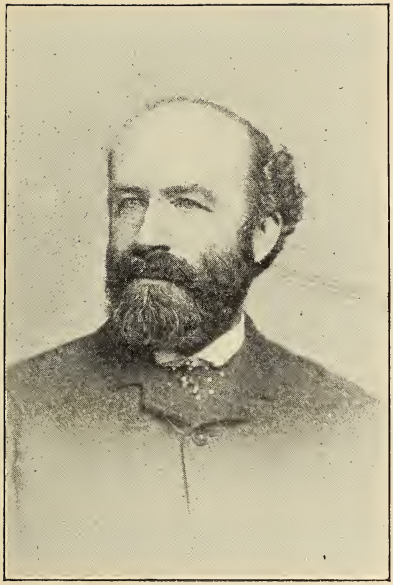
HOWARD WEST, Assoc. R.S.M.

New Denver, B.C.

Mr. John E. Hardman, S.B.
Consulting Mining Engineer, Montreal.

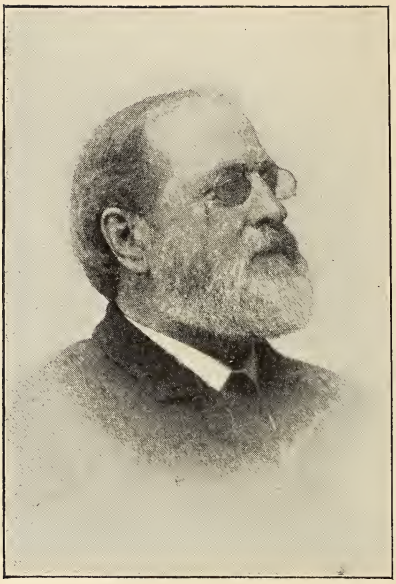


MR. FRANK C. LORING, M.E.
Josie Gold Mining Co., Rossland, B.C.



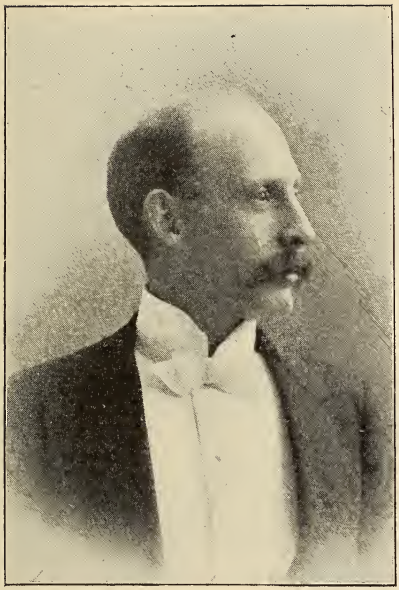
Capt. R. C. Adams,

Managing Director, Adams' (British Columbia) Co., Montreal.



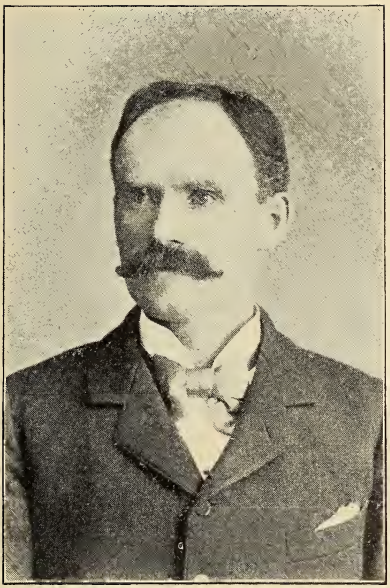
Mr. S. M. Robins,

General Manager, New Vancouver Coal Mining and Land Co., Nanaimo.



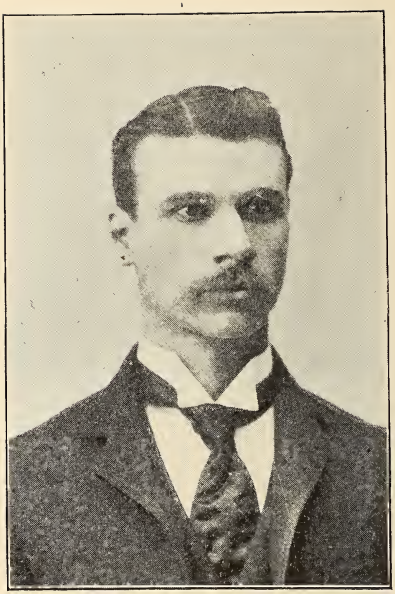
N. L. DAVENPORT,
Poorman Gold Mine, Nelson.

Mr. James D. Sword, M.E.
Rossland, B.C.

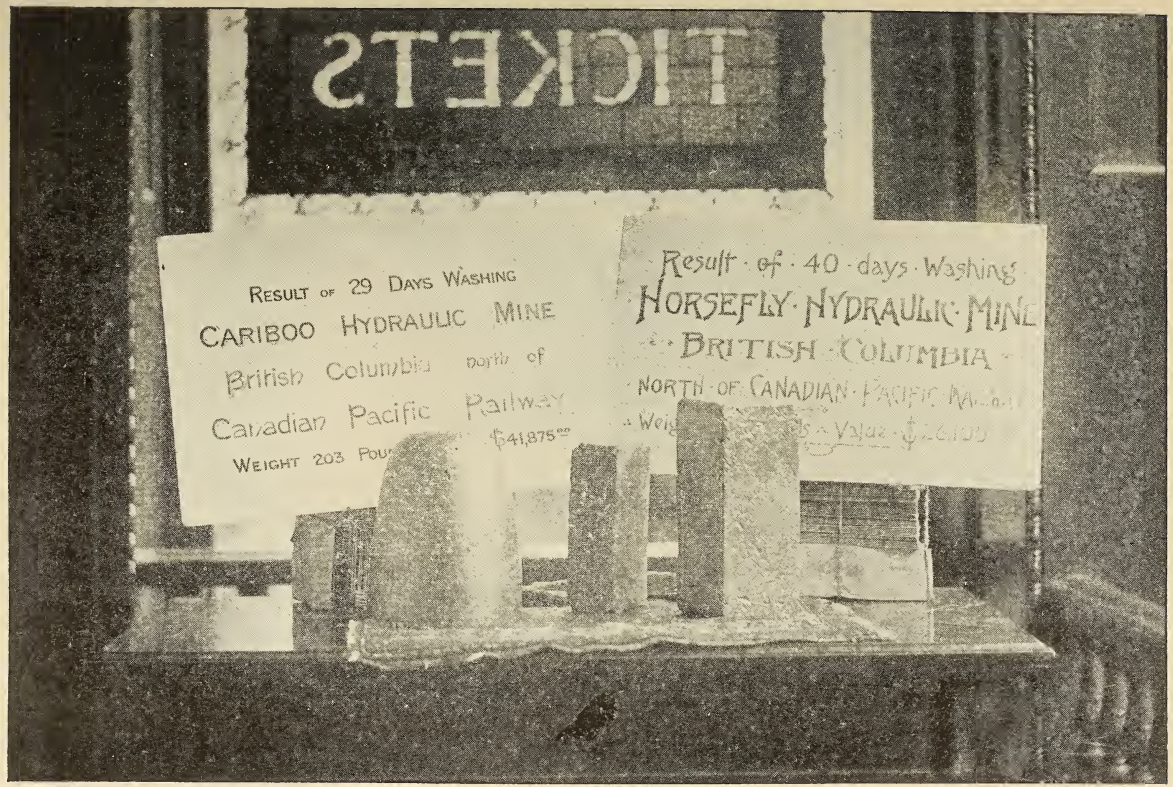


Mr. E. J. Kelly,

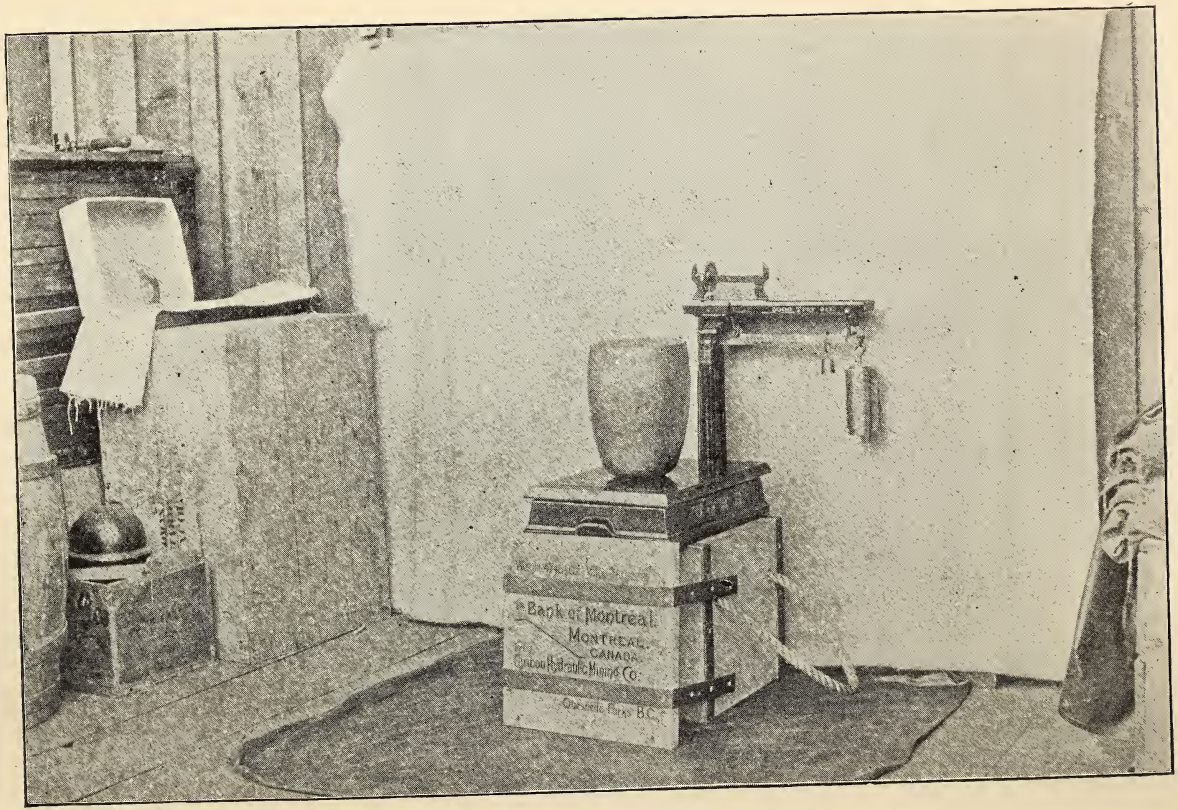
Superintendent, Deer Park Mine, Rossland, B.C.



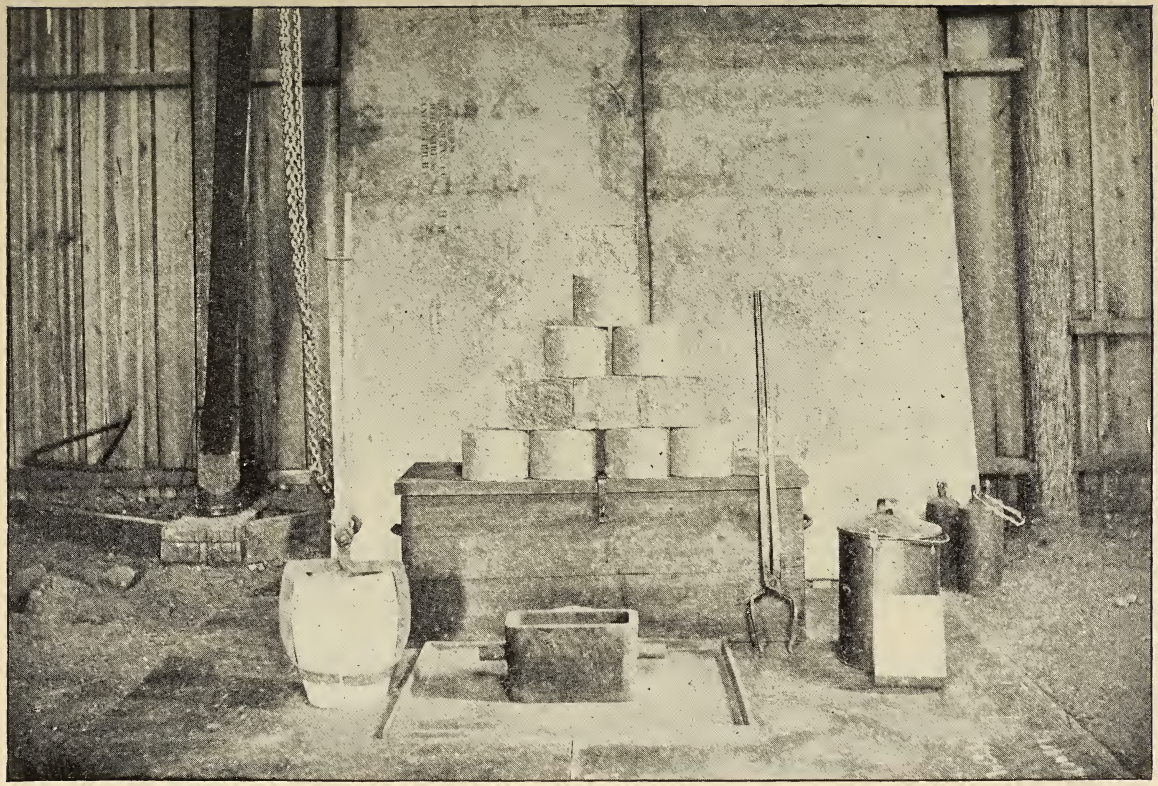
Mr. Charles Robbins,
War Eagle Con. Mine, Rossland, B.C.


TICKETS
Result of 29 Days Washing
CARIBOO HYDRAULIC MINE
British Columbia north of
Canadian Pacific Railway
$41,875
Result · of · 40 · days · Washing
HORSEFLY · HYDRAULIC · MINE
BRITISH · COLUMBIA
NORTH · OF · CANADIAN · PACIFIC

GOLD BRICKS FROM CARIBOO AND HORSEFLY HYDRAULIC MINES IN 1895, VALUE $67,975.



CARIBOO HYDRAULIC MINING CO.—Ingot (1896) after Melting.



Cariboo Hydraulic Mine—Cakes of Retorted Gold before Melting.

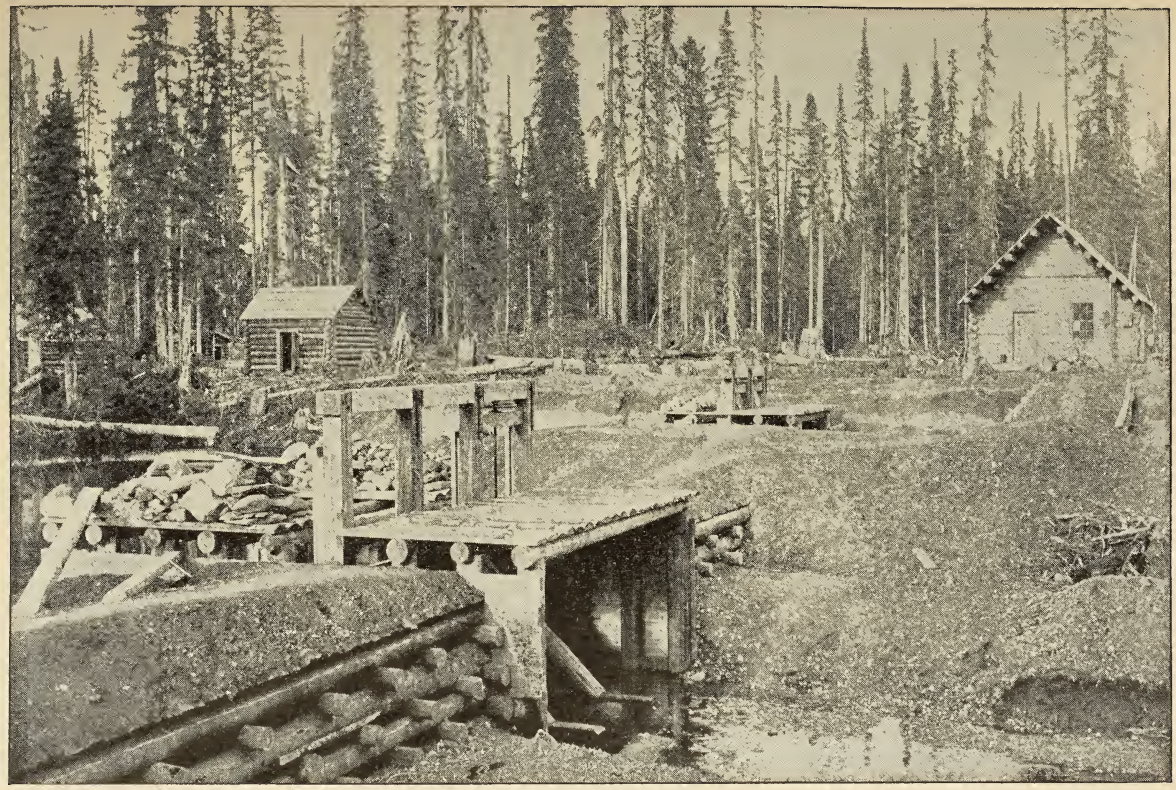
CARIBOO HYDRAULIC MINING CO.—Giants discharging 2,000 Miners' Inches in No. 1 Pit.

CARIBOO HYDRAULIC MINE—Giants discharging 2,700 Miners' Inches of Water in Pit No. 2.

CARIBOO HYDRAULIC MINE—Monitors at Work in Pit No. 1.

CARIBOO HYDRAULIC MINING CO.—Head Gate and Crib Work at Polleys Lake, B.C.

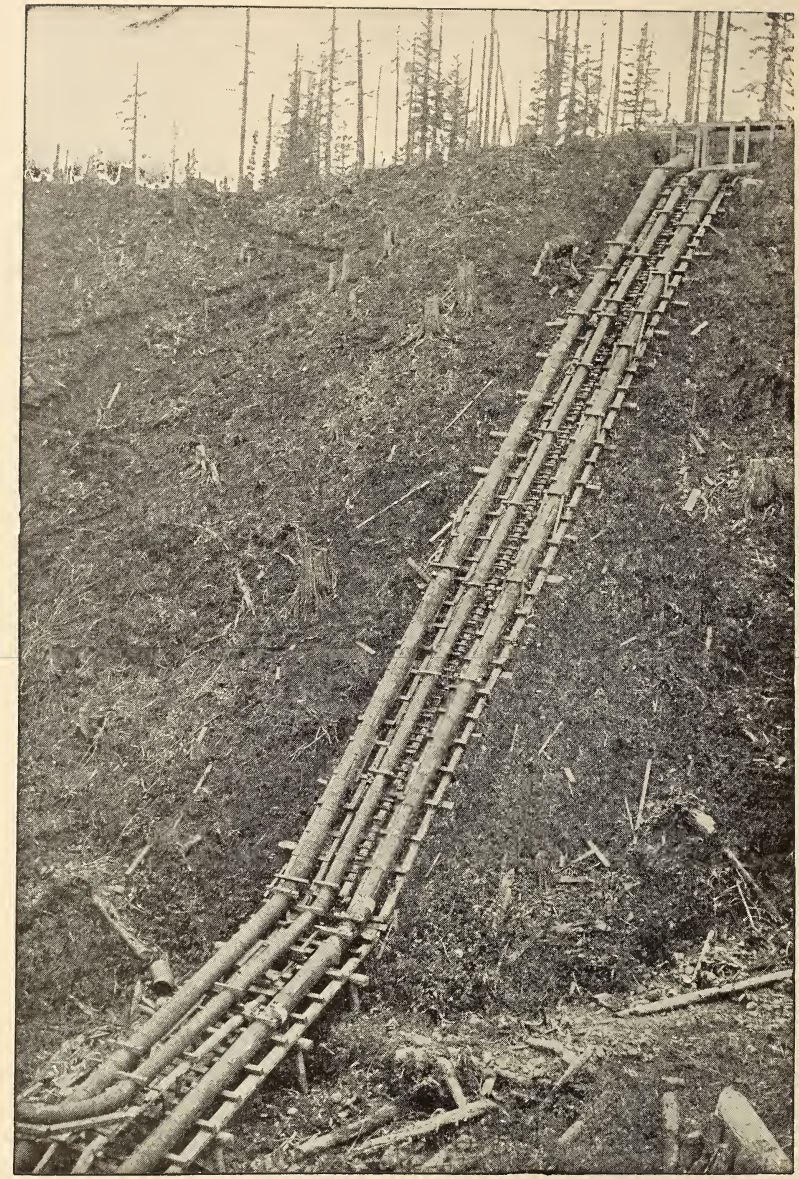
Cariboo Hydraulic Mining Co.—Pooling Reservoir for Main Ditch—Old South Fork Gates and Cabins.



CARIBOO HYDRAULIC MINING CO.—Head of Main Ditch with Division Dam in Six-Mile Creek and Head Gate in Main Ditch.

Cariboo Hydraulic Mining Co.—Flume below Hazeltine Creek.

Cariboo Hydraulic Mining Co.—Camp No. 4, Hazeltine Creek.



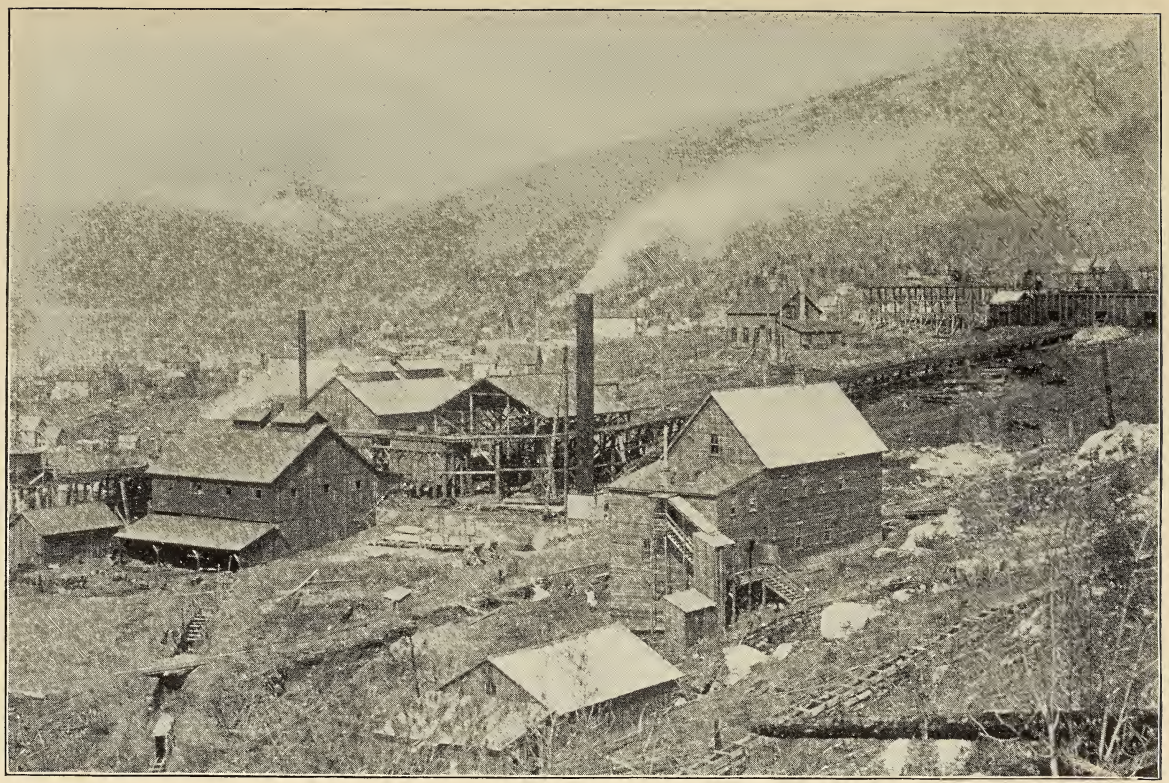
CARIBOO HYDRAULIC MINING CO.—Pipes down side of Dancing Bill Gulch.

QUESNELLE RIVER, B.C., LOOKING WEST FROM BRIDGE.

Town of New Denver, B.C.

Town of Kaslo, B.C.

Town of Sandon, B.C.



HALL MINES, LTD.—Smelter at Nelson, B.C.

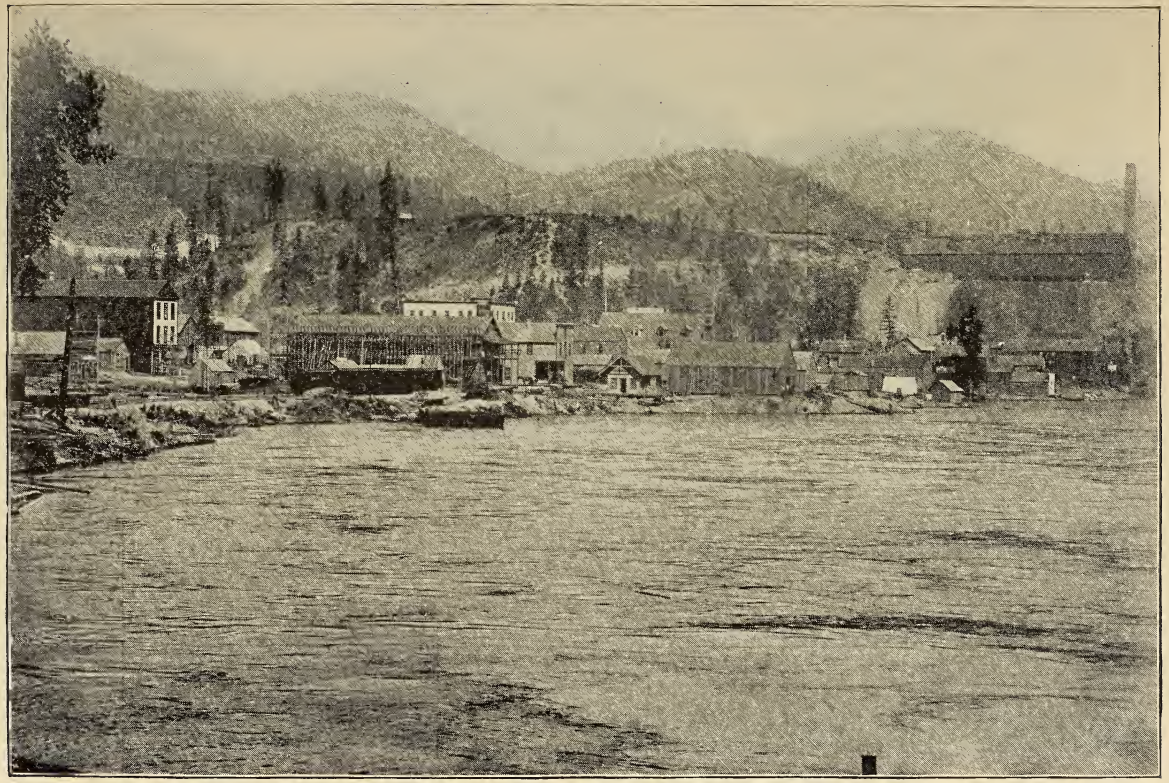
HALL MINES, LTD.—Ore Bins at Smelter.

HALL MINES, LTD.—Hallidie Tramway for conveying Ore from Silver King Mine to Smelter at Nelson, B.C.

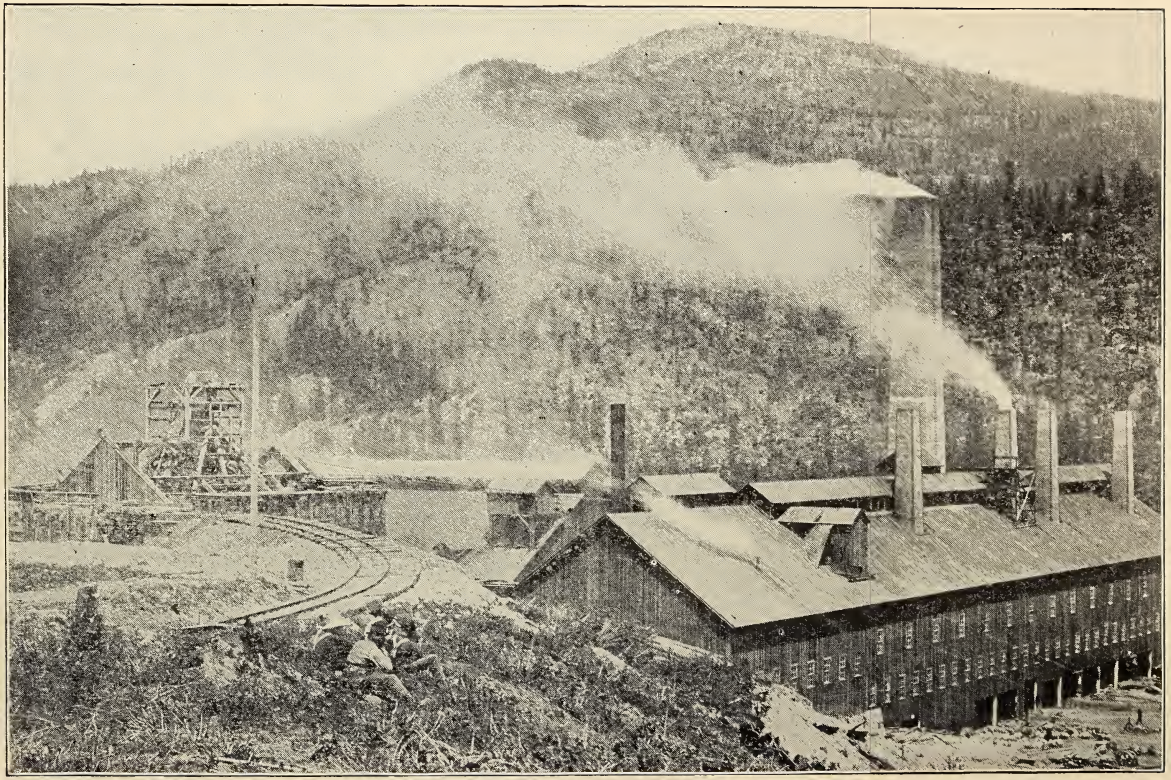
KOOTENAY MINING AND SMELTING CO.—Smelter at Pilot Bay, B.C.

BYRON N. WHITE CO.—Concentrator at Slocan Star Mine, Sandon Creek, B.C.

Mountain Chief Silver Mine.



Town of Trail, showing Smelting Works.



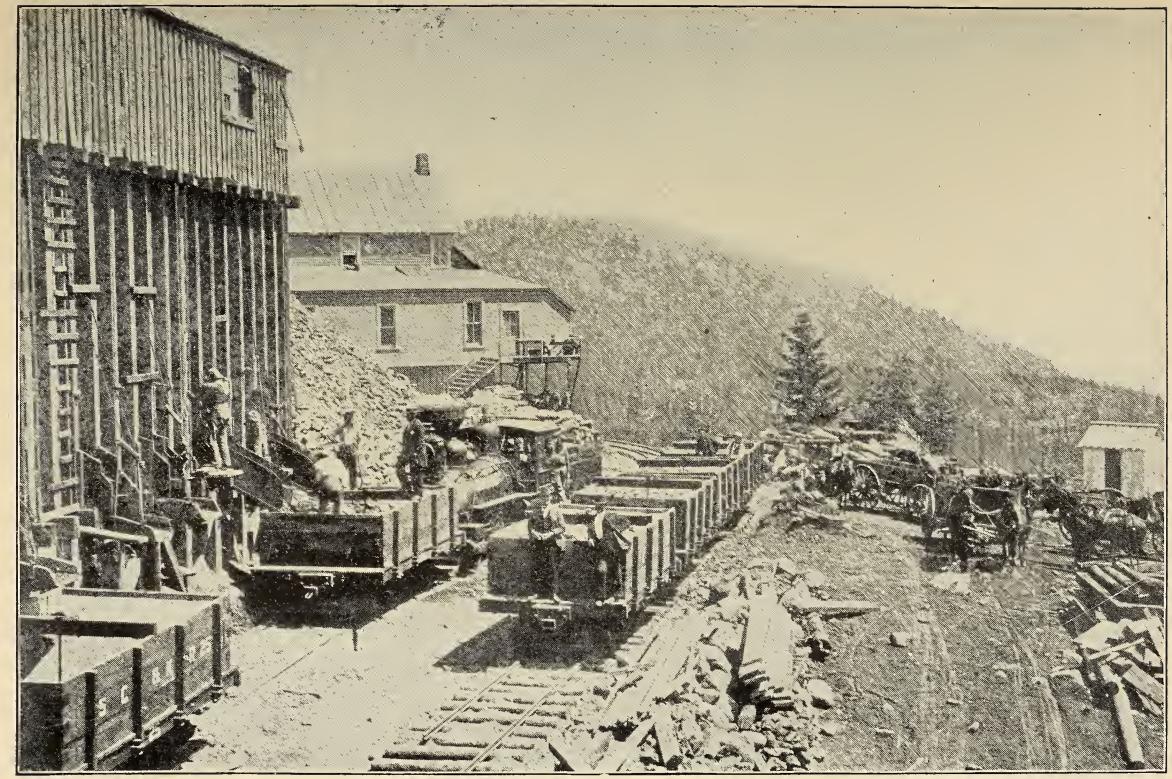
British Columbia Smelting and Refining Co.—Smelting Works at Trail, B.C.

Columbia Avenue, Rossland, B.C.

Surface Works at War Eagle Mine, Rossland, B.C.

Pile of Ore at Le Roi Mine, Rossland, B.C.

Surface Works, Le Roi Mine, Rossland.



Loading Ore on Cars for Smelter at Le Roi Mine, Rossland.

CENTRE STAR MINE, ROSSLAND.

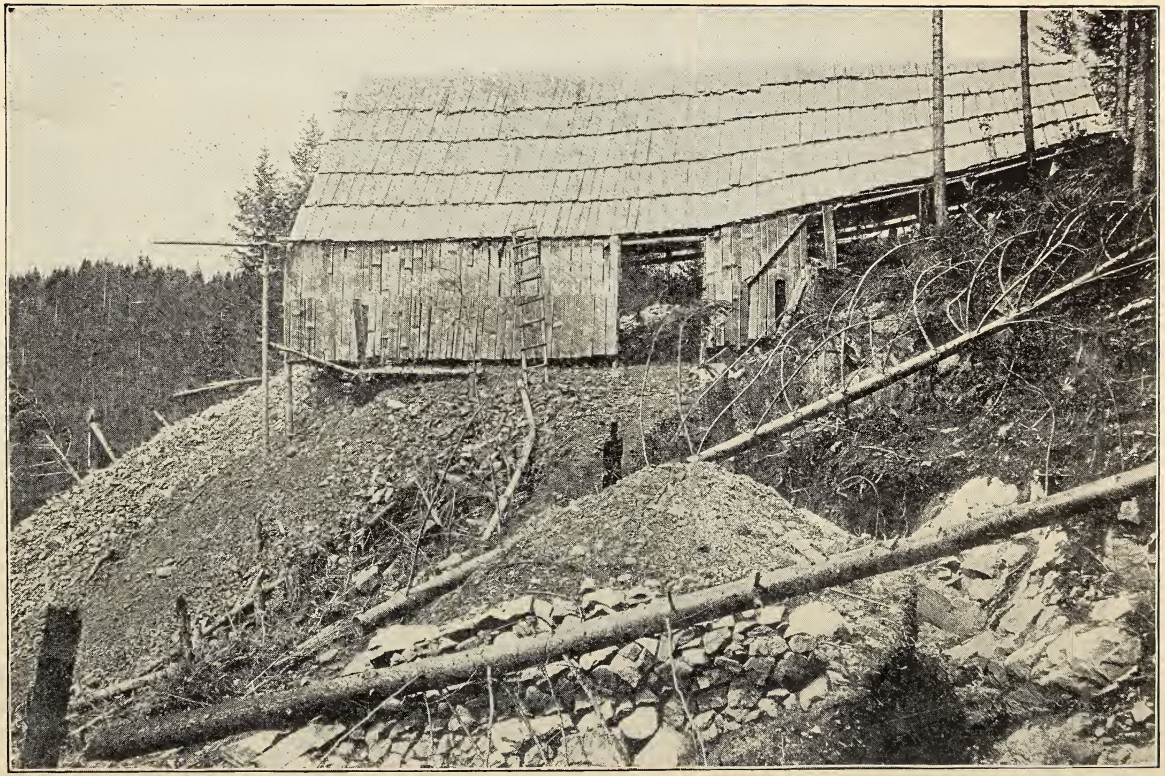
O K Mine, Rossland, B. C.

Iron Mask Tunnel, Rossland, B.C.

GROUP TAKEN AT CLIFF MINE, ROSSLAND, B.C., 1896.

ENGINE AND SHAFT HOUSE IN COURSE OF CONSTRUCTION AT JOSIE MINE, ROSSLAND, B.C.

Installing Machinery at Commander Mine, Rossland, B.C.



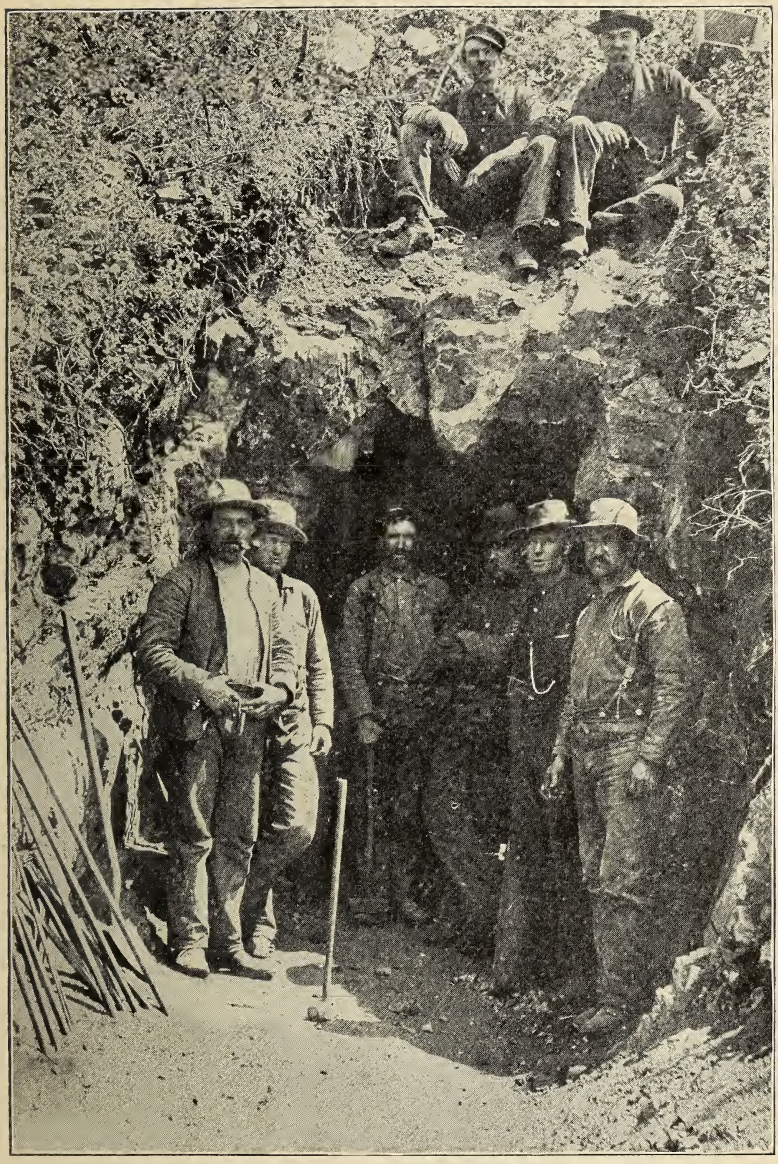
Crown Point Mine, Trail District, B.C.

GROUP OF MINERS AT JUMBO MINE, TRAIL DISTRICT, B.C.

Lower Tunnel, Georgia Mine, Trail District, B.C.

Town of Trail, B.C, showing Smelting Works.

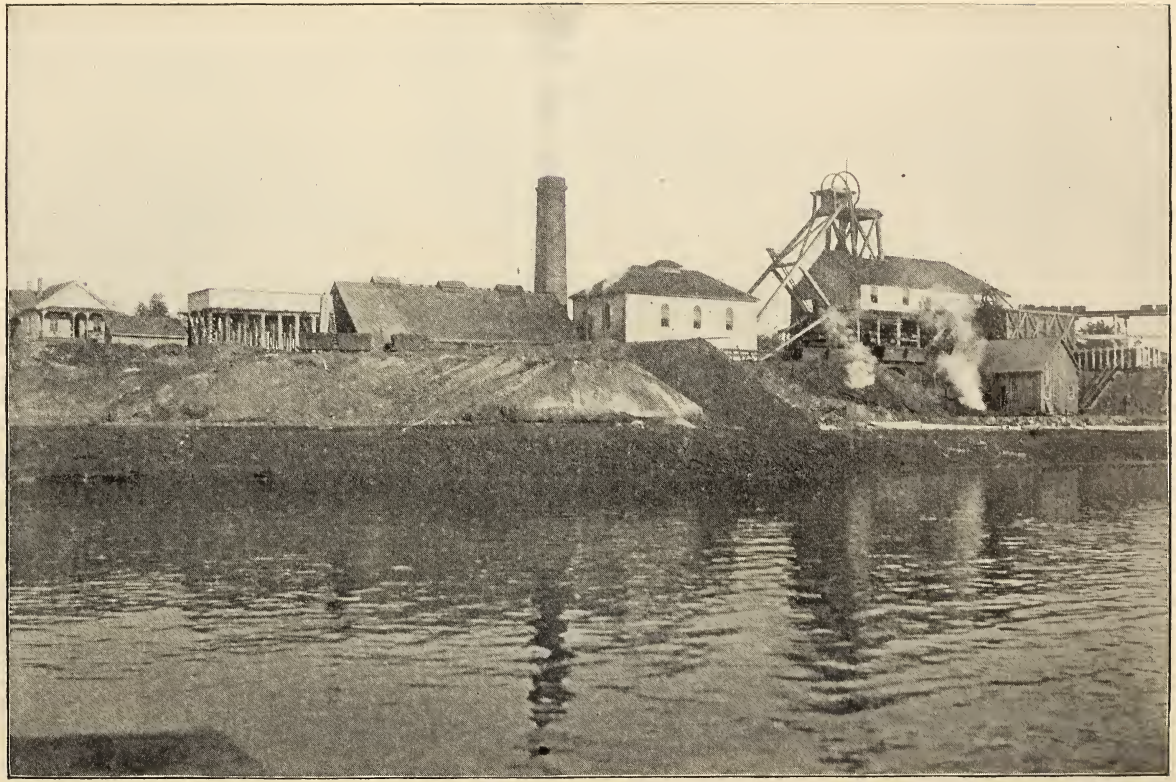
TUNNEL AT THE LILY MAY MINE, TRAIL, B.C.



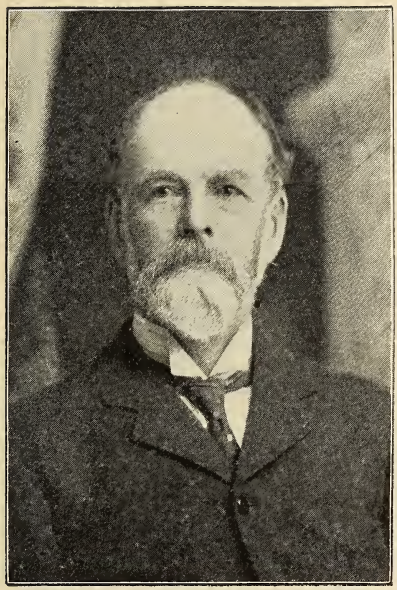
LOWER TUNNEL, MONTE CRISTO MINE, TRAIL, B.C.

PROSPECTORS EN ROUTE FOR TOAD MOUNTAIN.

NEW VANCOUVER COAL MINING AND LAND CO.—No. 1 Shaft, Nanaimo, B.C.

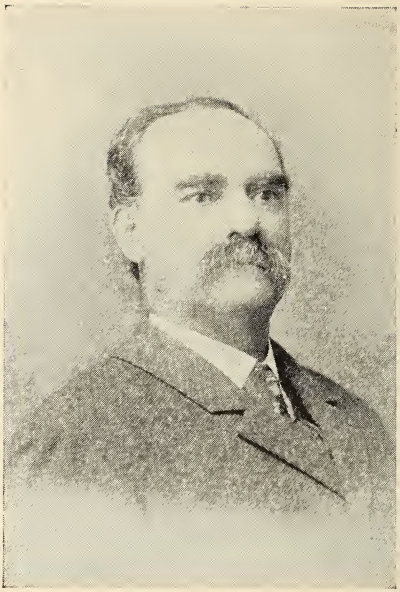


New Vancouver Coal, Mining and Land Co.—No. 1 Shaft from Harbor.



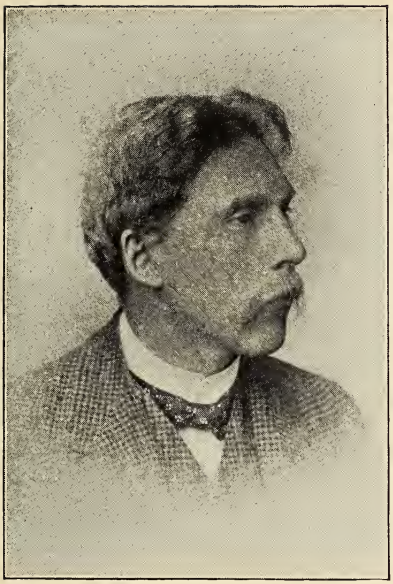
Major C. P. Dupont,

Managing Director, Golden River (Quesnelle) Ltd., Victoria, B.C.



James Champion, C. & M.E.

Consulting Engineer and Mining Supt., Cariboo Gold Fields, Ltd., Rossland, B.C.



R. C. Campbell-Johnstone, M.E.
Bondholder Silver Mine, Slocan City, B.C.

H. A. GUESS

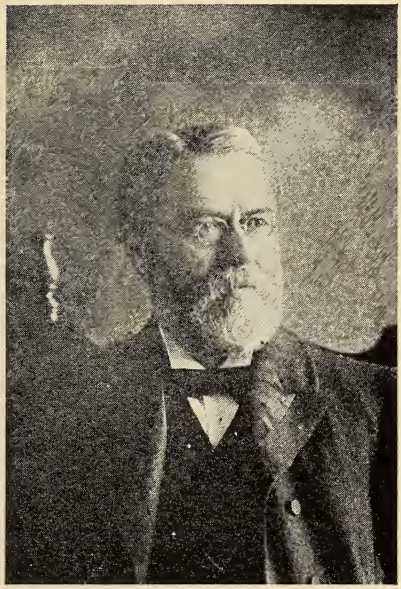
G. N. GUESS

Metallurgical Chemists, Greenwood City, B.C.

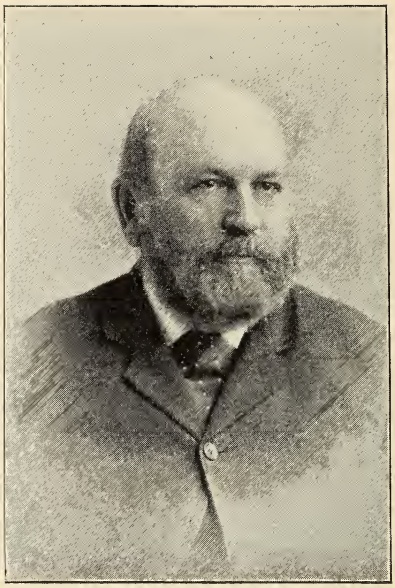
Mr. H. E. D. Merry,
Rossland, B.C.

Mr. G. F. Moncton, F.G.S.

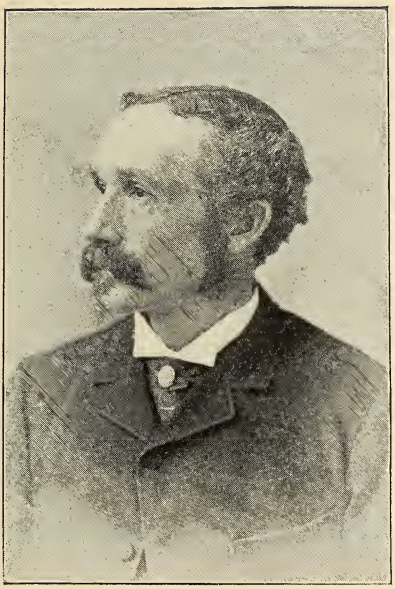
Hon. Secretary, B. C. Association of M. E., Vancouver, B.C.



Hon. J. M. Gibson,
Commissioner of Crown Lands, Toronto.



Hon. C. E. Church,
Commissioner of Public Works and Mines, Halifax, N.S.



Mr. George Stuart,
Mining Engineer, Truro, N.S.

J. D. Copeland,

Modstock Gold Mining Co., Antigonish, N.S.

CAPE BRETON COAL FIELDS.

Drawn for the "Manual" by M. L. O. Senecal, C.E.

LEGEND

- Coal Measures.
- Millstone Grit.
- Carboniferous Limestone.
- Devonian.
- George River Limestone.
- Laurentian.

Coal crops

Do doubtful.

Lignites

Direction of dip.

Faults

Coal area boundaries.

Scale of Statute Miles.

D A

13. X. 99
CANADA

COAL MINING AND TRADE.

The coal areas of the Dominion are estimated at 97,200 square miles, not including areas known, but as yet undeveloped, in the far north.

There are, first the coal fields of Nova Scotia and New Brunswick; second, those of Manitoba and the Northwest Territory; third, those of the Province of British Columbia.

Nova Scotia.

The coal areas of this province are estimated to cover 635 square miles, and so far as they are at present worked, are divided into the Cape Breton, Pictou and Cumberland districts.

The Cape Breton Coal Field—The coal fields of Cape Breton comprise four large areas, (1) on the coast east and west of Sydney harbor, (2) in Inverness County, between Margaree harbor and Port Hood, including important mines at Broad Cove, (3) a basin on River Inhabitants, near Glendale, and (4) a tract in Richmond County, near the mouth of River Inhabitants. But as all the mines at present worked, producing about one million tons of coal annually, lie within the Sydney coal field, this alone will be referred to.

The land area occupied by coal bearing rocks in the Sydney coal field has been estimated at two hundred square miles, while an immense submarine area contains large seams of coal in workable condition, easily accessible. The rocks are regular and rest everywhere upon the millstone grit, except where brought by a fault against a mountain of Laurentian rocks at New Campbellton at the western edge of the coal field.

The coal measures have been folded into subordinate basins so as to bring the coal seams to the surface under the most favorable conditions for their extraction and shipment. The whole coast is deeply indented by bays and channels approximately coinciding with the axes of these folds, affording in the sea cliffs numerous natural exposures of the coal seams and accompanying strata and constituting excellent harbors, one of which, Sydney harbor, situate towards the centre of the district is one of the finest in the world. During the few months of winter, when the more northerly harbors are closed or obstructed by ice, a railway carries coal from the collieries east of Sydney harbor to the fine winter port of Louisburg.

The cliffs are generally from thirty to one hundred feet high, and the country is of a gently rolling character, the highest altitudes seldom exceeding two hundred and fifty feet. Such natural advantages, combined with its highly favorable geographical position, point to this district as probably the most important in the Dominion for the supply of fuel to the numerous steamers navigating the Atlantic.

Taking the average of all the sections, the total number of seams in the productive measures is twenty-four, of which six are three feet or upwards in thickness, and the total average thickness of coal may be stated at forty-six feet. The similiarity and persistency of the seams over great areas is very remarkable, although local variations are frequent. There is, therefore, no great uncertainty in regard to the equivalency of the various seams at different points. They generally dip at a very low angle and are little affected by faults and disturbances.

The coal is of the soft, or bituminous variety, with comparatively little diversity in the quality of the different seams, all of which yield a coal exceedingly well adapted for steam and domestic purposes, while that of some of them is especially applicable to the manufacture of gas. Much of it will compare very favorably with the best English coal. As compared with the Pictou coal it is characterized by a greater proportion of combustible matter and a smaller proportion of ash ; but on the other hand it usually contains a greater amount of sulphur, although experiments made on a small scale at Ferrona seem to prove that some of the coals will yield a coke as suitable for iron smelting as that made from a mixture of Acadia, Drummond and Springhill coals.

Underclays, charged with roots and innumerable rootlets, occur beneath every coal seam and bed of carbonaceous shale, and their roof shales are for the most part rich in fossil plants. The productive measures contain also beds of argillaceous and aranaceous shale, usually grey ; sandstone, limestone, red and green marl. They are underlaid in descending order by the millstone grit, carboniferous limestone and conglomerate.

ANALYSES OF CAPE BRETON COALS.*

Mine.	Volatile Matter.	Fixed Carbon.	Ash.	Total Sulphur.	Sulphur in Ash.	Calorific Power.
Caledonia (Phelan)	28.02	68.05	2.19	1.72	0.05	7623
Dominion (Phelan).....	25.13	71.22	2.73	1.10	0.10	7403
Old Bridgeport (Phelan)..	31.81	63.86	3.09	1.33	0.12	7238
Reserve (Phelan).....	32.00	63.93	2.95	1.33	.....	7513
Hub.....	29.10	65.50	4.50	3.29	0.12	7458
Sterling (Harbour).	37.96	54.84	5.60	4.03	.....	7403
Victoria (Ross).....	34.65	58.42	4.93	3 48	.....	7513
Old Sydney (Main)	34.65	57.67	6.63	4.10	0.14	7623
New Campbelton.....	32.07	56.86	7.46	5.90	.....	7073

COMPARATIVE ANALYSIS recently made by The People's Heat and Light Co., Halifax, 1896 :—

	Volatile Matter.	Fixed Carbon.	Ash.
Ordinary Cape Breton coal.....	36%	59%	5%
Crushed coke from coal.....	1%	90%	9%

*By Mr. F. H. Mason, F.C.S., Trans. Fed. Canadian Mining Institute, Vol. I, 1896.

STATEMENT SHOWING WORKABLE SEAMS AND YIELD OF COAL IN THE EASTERN COALFIELD, CAPE BRETON COUNTY.

SEAM.	Thickness. Ft. In.	Land Area Square Miles.	Sea Area Square Miles.	Total Square Miles.	Gross Tons in Land Area.	Gross Tons in Sea Area.	Total Gross Tons.	Workable Tons in Land Area.	Workable Tons in Sea Area.	Total Workable Tons.
OLD SYDNEY MINES.										
Main Seam	6.0	11	30	41	59,136,000	161,280,000	220,416,000	39,916,800	72.576,000	112,492,800
Indian Cove.....	4.8	6	12	18	17,920,000	35,840,000	53,760,000	12,096,000	16,128,000	28,224,000
Lloyd's Cove.....	5.0	2	20	22	8,960,000	89,600,000	98,560,000	6,048,000	40,320,000	43,368,000
Cranberry Head...	3.8	$\frac{1}{256}$	$4\frac{1}{2}$	$4\frac{257}{256}$	131,413	14,783,998	14,915,411	118,272	6,652,800	6,771,072
	19.4	$19\frac{1}{256}$	$66\frac{1}{2}$	$75\frac{257}{256}$	86,147,413	301,503,998	387,651,411	58,179,072	135,676,800	193,855,872
LOW POINT AREA.										
Carr	4.0	$\frac{1}{4}$	$13\frac{1}{2}$	$13\frac{3}{4}$	896,000	48,384,000	49,280,000	604,800	21,772,800	22,377,600
Paint	8.0	$\frac{3}{8}$	14	$14\frac{3}{8}$	2,688,000	100.352,000	103,040,000	1,814,400	45,158,400	46,972,800
Crandall.....	4.4	1	$21\frac{1}{2}$	$22\frac{1}{2}$	3,882,666	83,477,319	87,359,985	2,620,800	37,564,794	40,185,594
Ross	6.3	2	27	29	11,200,000	151,200,000	162,400,000	7,560,000	68,040,000	75,600,000
Frazer	6.0	6	$27\frac{1}{2}$	$33\frac{1}{2}$	32,256,000	147,840,000	180,096,000	21,772,800	66,528,000	88,300,800
McGillvray or Lingan....	5.0	$7\frac{1}{2}$	28	$35\frac{1}{2}$	34,200,000	125,440,000	159,640,000	23,160,000	56,448,000	79,608,000
Mullins..... ...	6.0	12	$29\frac{1}{2}$	$41\frac{1}{2}$	64,512,000	157,692,000	222,204,000	43,545,600	70,961,400	114,507,000
	39.7	$29\frac{1}{8}$	161	$190\frac{1}{8}$	149,634,666	814,385,319	964,019,985	101,078,400	366,473,394	467,551,794
GLACE BAY AREA.										
Hub	8.6	$\frac{1}{2}$	$10\frac{1}{2}$	11	3,808,000	79,968,000	83,776,000	3,570,400	35,985,600	39,556,000
Harbour.....	5.0	$2\frac{1}{2}$	15	$17\frac{1}{2}$	8,960,000	53,760,000	62,720,000	6,048,000	24,012,000	30,060,000
Back Pit.....	4.0	7	28	35	24,528,000	98,112,000	122,640,000	16,556,400	44,150,400	60,706,800
Phelan	8.0	11	29	40	78,848,000	207,872,000	286,720,000	53,222,400	93,542,400	146,764,800
Ross or Emery	5.0	13	30	43	58,240,000	134,400,000	192,640,000	39,312,000	60,480,000	99,792,000
Gardner	4.6	24	33	57	96,768,000	133,056,000	229,824,000	65,319,400	59,875,200	125,194,600
	35.0	58	$145\frac{1}{2}$	$203\frac{1}{2}$	271,152,000	707,168,000	978,320,000	184,028,600	318,045,600	502,074,200
COW BAY AREA.										
Blockhouse	8 10	$\frac{1}{2}$	$4\frac{1}{2}$	5	3,957,333	35,615,997	39,573,330	2,671,200	16,027,199	18,698,399
McAulay	5.0	$2\frac{1}{2}$	6	$8\frac{1}{2}$	11,200,000	26,880,000	38,080,000	5,040,000	12,096,000	17,136,000
McRury	4.4	$3\frac{3}{4}$	7	$10\frac{3}{4}$	14,559,997	23,215,996	37,775,993	9,827,999	10,442,198	20,270,197
	18.2	$6\frac{3}{4}$	$17\frac{1}{2}$	$24\frac{1}{4}$	29,717,330	85,711,993	115,429,323	17,539,199	38,565,397	56,104,596
Total	112.1	$112\frac{9}{10}$	$390\frac{1}{2}$	$403\frac{1}{2}$	536,651,409	1,908,769,310	2,445,420,719	360,825,271	848,761,191	1,219,586,462

ANALYSIS of washed coal slack, and coke made therefrom by the Nova Scotia Steel Co., 1895 :—

	Ash.	Sulphur.
HUB :		
Washed coal	4.37	2.38
Coke	11.20	1.34
PHALEN :		
Washed coal	7.05	2.87
Coke	11.30	2.13
HARBOUR :		
Washed coal	5.50	3.12
Coke	12.80	2.79

The largest mining companies are the Dominion Coal Company and the General Mining Association, while smaller outputs of coal are shipped from the Cape Breton colliery, worked in conjunction with a large deposit of the finest dolomite at New Campbellton, and from the North Sydney Mining Company at Indian Cove.

The Dominion Coal Company was organized in 1893, and as it is the most extensive coal operator, not only in Nova Scotia, but also in the Dominion, the following notes by a prominent engineer will serve to illustrate the magnitude of its operations :—

The advent of the company was signalized by a large expenditure of capital, it being the Director's wish to equip their mines with the most improved modern appliances in every department, so that the coal could be produced, transported and shipped at the lowest possible cost. The wisdom of this policy becomes more manifest every day, for since the first requisite for the success of this large corporation was of necessity an increased market, nothing would enable them to achieve this end in the face of the keen competition of American coal, both in Montreal and the New England States, unless the cost of production could be reduced to a minimum.

The expenditure thus incurred may be divided into three main heads, new piers for shipping, a railway from the terminus of the International Railway at Bridgeport to Louisburg, and the equipment of the mines with modern machinery. This programme has been carried out in its entirety, one may say, without regard to cost, but with every consideration for efficiency, and there are few coal corporations so well furnished in all departments. New piers have been erected in Sydney harbour and at Louisburg, the former being reported to be the largest shipping pier on the Atlantic coast. It is equipped with steam cranes and moveable loading towers, which, in connection with a huge bucket, lower the coal into the hold of the vessel before dumping it, and so save breakage. The capacity of this pier is 10,000 tons of shipping in 24 hours, and this can be increased if necessary by adding to the mechanical appliances. There is also a special bunkering pocket, capable of holding 300 tons, by means of which large vessels can be bunkered in one hour. The approaches to the pier are graded for upwards of half a mile, so that both full and empty cars run by gravitation. The pier is lighted by electricity. The pier at Louisburg is a less pretentious but equally efficient structure, the system of loading being by means of pockets and chutes. There is also an ingenious device by means of which the empty cars are lowered to the yard on the drop table principle. This pier has been specially

adapted to the requirements of Louisburg as a winter port, and is no doubt destined to bring to ancient Louisburg a commercial prestige which will vie with its military glory of former days, as with the development of New England trade, which is confidently expected, the shipments will no doubt reach a very large figure, and it is not a little singular that the place which was the first in Cape Breton, nearly 200 years ago to import coal for the use of its garrison, should now, by a turn in the whirligig of time, be preparing for a large export trade.

The railway already referred to has been constructed from Bridgeport to Louisburg, with branches running into all the mines en route. This is a splendid road of easy grades, well ballasted, and laid with eighty pound rails. It is well equipped with rolling stock, consisting of ten and fifteen ton cars, and locomotives ranging from twenty to one hundred tons in weight. The largest of these, the "Dimock" is capable of hauling 1,000 tons of coal over the whole length of this line. The work at the mines has been of a very diversified character, and is represented mainly by an enormous addition to the mechanical appliances for cutting, hauling, hoisting and screening the coal. It was recognized from the beginning that coal to be cheap must be cut by machinery, and so at Caledonia, Old Bridgeport, Sterling, and Gowrie mines air compressors of the best type have been put down, and a number of coal cutting machines, mostly of the percussion type are at work, whilst the new mine, Dominion No. 1, is laid out entirely for this class of work, and furnished accordingly. Although many initial difficulties had to be overcome, the system is now firmly established, and during 1896 upwards of 300,000 tons were produced by this means, and the percentage is likely to increase in the future. The question of haulage next claimed attention. When the present company took over the mines all the underground haulage was done by horses; to-day there are more than twenty miles of haulage rope running, nearly the whole of this working upon the endless haulage system, which has proved to be the most economic and efficient in moving the large tonnages required from these mines, and ensuring a constant supply of coal at the pit bottom. The system is everywhere operated by the aid of electric signals. Great improvments have been effected in the hoisting arrangements. The old engines at Caledonia and Old Bridgeport having been replaced and powerful modern engines erected at the new mines, Dominion No. 1. and the Hub. By this means the speed of hoisting has been accelerated, and at Caledonia it has reached a maximum delivery of 180 tons an hour. A special feature in connection with the hoisting arrangements, is the use of a self-dumping cage which obviates the necessity for removing the full tub at the pit top. The coal is, by a semi-circular movement of the cage bottom, dumped into a suspended weighing tank, and passes thence over the screens. The latter appliances are of the ordinary longitudinal bar pattern, and are provided with swinging chutes, which lower the coal into the car. An important addition has been made this season at Dominion No. 1 in the shape of two picking belts, each 40 by 5 feet, capable of hauling 2,000 tons per day. By means of these the coal is thoroughly picked and delivered into the cars practically free from impurity. A similar system is to be applied at the other mines. It is generally conceded that during last season the coal was shipped in better condition than ever before and that

little more can be done to improve matters in this respect. This has not been achieved without a large expenditure of money and the exercise of much ingenuity and forethought. There is a considerabe quantity of "pyrites" and "splint" to be picked out of the Cape Breton coals, and there is a further difficulty to be overcome which was pointed out by Sir Wm. Dawson many years ago, namely, the tendency of these coals to fall to pieces by rough handling or exposure in consequence of numerous films of carbonate of lime running through them. The only cure for this is tender handling, and all the recent appliances in connection with screening and transportation are designed to effect this result.

It only remains to be said that the system of work pursued is that known as "pillar and room," and although there is no doubt that the conditions are favorable to "long wall" working, this cannot be resorted to extensively until operations have proceeded further to the deep, where the greater cover will ensure safety and prevent the breaking in of the surface. It is unfortunate, but by no means peculiar to this district, that crop workings have in the early stages of coal mining been the order of the day. The natural consequence is an extensive caving in of the roof, especially where some of the pillars were injudiciously removed. This naturally led to inundations of surface water, much of which has to be pumped from the mines at a heavy cost. There is no doubt that this system of working is responsible for the bulk of the water so dealt with, and whilst it is at present being raised by a large number of pumps, distributed around the mines, there is little doubt that before long some system of concentration will have to be adopted. As illustrating in detail the extent to which pumping is resorted to, a tabulated statement is appended, showing all the pumps in operation in the Dominion Coal Co.'s mines, as well as Sydney mines, their capacities and the quantity of water raised every twenty-four hours; also a statement giving a complete list of the hoisting and haulage engines working at the end of 1896.

CAPE BRETON COUNTY, TONS OF COAL SHIPPED FROM 1858 TO 1895.

Year.	Tonnage.	U.S. Duty.	Year.	Tonnage.	U.S. Duty.
1858	106,979	Free.	1868	274,964	"
1859	123,210	"	1869	308,025	"
1860	143,404	"	1870	333,803	"
1861	154,222	"	1871	338,431	"
1862	182,583	"	1872	380,273	.75
1863	216,175	"	1873	520,189	"
1864	340,343	"	1874	337,016	"
1865	424,552	"	1875	304,702	"
1866	371,220	$1.25	1876	268,808	"
1867	334,501	"	1877	301,981	.75

Details of Pumping Appliances in Cape Breton, 1896.

Collieries.	Number of Pumps.	Name and Style of Pump.	Number of Steam Cylinders.	Steam cylinder, dia. in inches.	Water Plunger, dia. in inches.	Length of Stroke.	Strokes per min.	Steam pressure at bank.	Steam pressure at pump.	Gallons of water pumped daily.	Gallons of water pumped daily.
Sydney Mine (Queen)	1	Elliott	1	30	8	48″	17	27	....	360	172,620
Sydney (Princess)	2	Cornish	1	62	20	84″	4½	40	....	720	139,863
Victoria	3	Northey	2	22	8	24″	25	70	60	350	240,000
	....	Elliott	1	18	7	48″	25	70	60	220	
	....	Cameron	1	16	6	30″	25	70	60	250	30,000
International	1	Knowles	1	24	8	24″	25	50	45	310	120,000
Reserve	2	Cameron	1	12	7	24″	25	100	60	150	70,000
	....	"	2	10	7	10″	50	100	60	90	36,000
Caledonia	2	Northey comp'd	2	18½	10	24″	25	100	95	190	384,000
			2	12							
	....	Knowles	1	14	8¾	24″	30	100	60	125	72,000
Stirling	3	Lifting	2	12	10	53″	22	100	....	250	300,000
	....	Northey	1	18	8	16″	60	100	95	250	
	....	Cameron	1	12	7	18″	60	100	60	100	18,000
Old Bridgeport	1	"	1	8	4	8″	100	70	60	120	14,000
Dominion	3	"	1	14	9	30	25	100	90	160	128,000
	...	"	1	10	5½	12	80	100	60	75	3,600
	....	"	1	10	6	16	80	100	60	50	1,000
Hub	3	"	1	14	9	30	25	100	95	130	256,000
	....	"	1	10	6	10	50	100	60	80	60,000
	....	"	1	10	4¼	10	50	100	60	80	48,000
	....	"	1	16	8½	30	50	100	95	130	.....
Gowrie	3	Knowles	1	20	10	36	25	40	35	204	240,000
	....	Lifting	1	16½	10½	42	18	40	....	204	188,000
	....	Knowles	1	18	8¾	24	70	100	60	125	50,000
	....	Fly wheel pump	1	12	5½	12	80	100	60	50	3,000

CAPE BRETON COUNTY, TONS OF COAL SHIPPED FROM 1858 TO 1895.—*Continued.*

Year.	Tonnage.	U.S. Duty.	Year.	Tonnage.	U.S. Duty.
1878	299,055	.75	1887	715,442	.75
1879	262,924	"	1888	.....	.....
1880	380,848	"	1889	.....	.....
1881	516,852	"	1890	916,994	.75
1882	585,568	"	1891	982,392	"
1883	612,614	"	1892	923,869	"
1884	539,064	"	*1893	792,762	"
1885	517,975	"	†1894	1,114,733	.40
1886	588,191	"	1895	1,031,341	"

DETAILS OF HOISTING AND HAULING ENGINES IN CAPE BRETON, 1896.

Colliery.	Whether hoisting or hauling.	No. and dia. of cylinders.	Length of stroke.	Dia. of Drum.	Weight of load.	Dia. of rope.	Length of haul.	Steam pres. in lbs.	System of haulage.
					cwt.				
Sydney mines	Hoisting	2-36"	60	18'	132	1⅜	660	40	Direct
	Hauling	2.16	36	4'	792	⅞	5400	40	Tail
	"	2.16	24	4'	252	⅞	5800	40	"
Victoria	"	2.20	52	8'	152	1	2000	70	Direct
International	Hoisting	2.16	42	6'	40	1	100	100	Geared
	Hauling	1.18	36	6'	2000	⅞	4000	100	Endless
Reserve	"	1.22	42	6'	2000	1	4000	100	"
	"	.....	.....	6'	2000	1	4000	100	"
Caledonia	Hoisting	2.20	48	8'-6"	120	1¼	180	100	Direct
	Hoisting men	2.10	12	4'-6"	20	1¼	180	100	Geared
	Hauling	1.22	42	6'	1600	⅞	3000	100	Endless
	"	.....	.....	6'	1600	¾	4000	100	"
	"	.....	.....	6'	1000	⅞	3000	100	"
Sterling	Hoisting	2.18	24	6'	75	1¼	245	100	Geared
	Hauling	1.18	36	6'	1000	¾	1500	100	Endless
	"	.....	.....	6'	1400	¾	2500	100	"
Old Bridgeport	Hoisting	2.14	15	6'	110	1¼	110	70	Geared
	Hauling	2.10	12	4'	500	⅞	2000	70	Tail
	"	2. 8	12	3'-6"	400	⅞	2000	70	"
Dominion	Hoisting	2.20	54	8'-6"	130	1⅜	150	100	Direct
	" men	2.16	36	6'	30	1⅜	150	100	"
	Hauling	1.18	36	6'	1600	⅞	1000	100	Endless
	"	1.18	36	6'	1600	⅞	2000	100	"
	"	2. 8	12	3'-6"	200	⅝	1700	75	Tail
Hub	Hoisting	2.24	42	8'-6"	130	1¼	100	100	Corliss
	" men	2.16	36	6'	30	1¼	130	100	Direct
	Hauling	2. 8	14	3-6'	200	¾	1500	90	Geared
Gowrie	Hoisting	2.20	30	8'	70	1⅛	264	100	Direct
	Hauling	1.18	30	6'	1200	⅞	2300	100	Endless

* Nine months only.
† Fifteen months.

The Pictou Coal Field in its relation to the other two most important fields of the Province—Cape Breton and Springhill—is much nearer to the latter, and in its general character bears a striking resemblance to it. It lies inland about 12 miles from Pictou harbour, in the county of the same name.

The true or productive area is about 11 miles long, extending almost from Sutherland's river in the east to some distance beyond the Middle river in the west, and in its broadest part, from the Town of New Glasgow in the north to a point a mile southeast of the town of Stellarton, is three miles wide, covering an area of about 22 square miles.

The accompanying map is intended merely to give a general idea of the configuration of the field and the geological formations which encompass it. A map of the field on a much larger scale, and embodying the results of the most recent investigations is in course of preparation, and it is expected will shortly be published.

In age of discovery the field ranks next to that of Cape Breton, but is contemporary with it in so far as active development of the mines is concerned, for they both became the property of the same great corporation, the General Mining Association of London, in the year 1827 ; and from that year dates the inception of mining operations on a larger scale than had hitherto obtained.

According to the Rev. Dr. Patterson, historian of the county, coal was first found on a brook near the present town of Stellarton, formerly known as the Albion mines, in 1798, but the main seam was not discovered until some years later. Subsequently a second seam was opened up, and from those two seams—the Main and the Deep—the output of the county was drawn down to the year 1858, when the G. M. A. surrendered, with certain reservations, the exclusive mineral rights of the Province, which had been held by them since 1827. The story of that monopoly has been so often re-told and recorded, that it needs no repetition here.

Little time elapsed, however, before the change in affairs brought about the discovery of valuable seams of coal to the west of the Albion mines, and a few years later a seam was found at the Vale, or eastern end of the field, to be followed shortly afterward with the finding of others. At odd intervals in several other parts of the field crops of limited extent, owing to the faulted character of the ground, have been traced and some exploratory work done upon them.

Bands of oil shale, of which several are known to exist, were also exploited about the same time, but for many years nothing has been done upon them. Fuller particulars concerning these seams and bands and other matters of great interest may be found in the following publications :—

Dawson's Acadian Geology.
Geological Survey Report, 1869.
How's Mineralogy of N. S., 1868.
Rutherford's "Coal Field's of Nova Scotia," N. E. Inst. of M. E., 1870.
Gilpin's "Mines and Mineral Lands of N. S," 1880.

Reports of the Geological Survey by H. Fletcher, and the more recent monograph of Mr. H. S. Poole, in the Transactions of N. S. Inst. of Science, Sec. E, Vol. I, Part 3.

PICTOU COAL FIELD, NOVA SCOTIA.

Prepared for the "Manual" by Mr. J. G. RUTHERFORD, M.A., M.E., Stellarton, N.S.

Geologically considered, the field is one of intricate structure, and presents to the student many features of interest and several knotty problems for solution. The remarkable thickness of many of the seams, ranging as high as 40 feet; the great deposits of black and brown shale, and the marked changes that both undergo in comparatively short distances; the heavy and ever-changing dip at which the measures lie, and the faults of greater or less maguitude that traverse the field in many directions, are some of the notable features that afford food for reflection.

Over the larger portion of the field the measures are underlaid conformably by the millstone grit, which is not known to contain any seams of workable thickness, while at other points they come up against the lower carboniferous and rocks of much greater age. Skirting the northern edge of the field is the great bed known as the New Glasgow Conglomerate, the true relation of which to the coal measures was for long a matter of dispute, but is now believed to be the base of a large expanse of Permian strata that stretched from Merigonish in the east to Amherst in the west, and extend many miles northwardly to the waters of the Gulf.

There are three coal producing districts, the Albion or Central—also the oldest in point of discovery—flanked on the west and east by the Westville and Vale districts, respectively. The Westville division is believed to be the equivalent of the Albion, separated from it by a down-throw fault to the west of some two or three thousand feet, while the Vale syncline appears to lie in an upper series of measures.

Four seams have been worked at the Albion, the Main 38 feet thick, Deep 22 to 40 feet, Third 10 to 13 feet, and the McGregor, 13 to 20 feet thick, all occuring in some 500 feet of strata, and with over one thousand feet of black and brown shales overlying the main or uppermost seam. Several bands of inferior coal and bituminous shale appear in the seams and undergo changes previously referred to. Other seams are known to exist, but the workable thickness has not been proved, except in the case of the Stellar oil-coal, which was worked about thirty-six years ago for the sake of its oil and gas producing properties. The dip of the measures varies from 10° in the eastern end of the syncline to 31° in the western portion approaching the McCulloch brook fault.

In the Westville division one seam only, the Acadia, 20 feet thick, and believed to be the equivalent of the Albion main seam, has been worked extensively, although at the Drummond colliery a second seam 12 feet thick has been exploited. The crops of the other two underlying seams, called the Third and Fourth, and having thicknesses given at six and eight feet respectively, have been proved. These seam all occur in about 380 feet of measures, which vary in dip and change in character in a similar manner to that prevailing in the Albion section.

At the Vale, or eastern end of the field, the order of affairs is transposed, and the thicker and more valuable seams are on the southern outcrop, the lower. Here the McBean, or 8 feet and the overlying six feet seams, with about 800 feet of shales and sandstones intervening, have been extensively worked. In the latter seam the floor of the syncline has been reached, and a peculiarity noticeable is the frequency with which masses of compact shale take the place of coal without any disturbance of roof or pavement.

The coals from the different seams vary somewhat in character and composition but are of the bituminous coking variety; all are comparatively high in ash and low in sulphur, and an excellent coke is made from some. They are chiefly in demand for steam raising and domestic purposes, and have been used in a raw state for iron smelting. Some have been used for gas making, yielding as much as 10,450 cubic feet of fifteen candle power per ton in tests made at the Gas Light and Coke Company's works, London, Eng. The slack coal from some of the seams is held in high repute for blacksmith's purposes.

The system of working adopted at the inception of the General Mining Association's operations, and with one or two exceptions practised at the present time, is that known as the bord and pillar. In the original work along the crops of the seams, the size of the pillars was so regulated as to be of only sufficient strength to sustain the weight of the overlying measures during the process of coal getting in the bords, and in the course of time they collapsed and much coal was lost.

Later, the size was increased with a view to subsequent robbing, and was in a measure successful. In recent years, however, modern methods, despite the physical difficulties of increased depth, higher angle of dip and tenderness of roof metals, have reduced the loss to practically nothing. At two collieries long-wall working has been successfully pursued for some years.

With one exception all the seams are fiery, and require the closest attention in directing the ventilation. Underground furnaces have long since disappeared, and fans of large capacity and modern construction, driven by engines of the most approved type, have taken their place. Safety lamps of the Mueseler, Marsaut, and other patterns, have been in use for many years. And, where the coal is got by blasting, explosives of a flameless character are employed and fired by elecricity under the direction of a person appointed for the purpose.

The use of compressed air for haulage and pumping underground is employed at the Westville collieries, and an endless rope haulage is in the course of installation at Stellarton.

The surface equipment of the collieries is up to date in all respects—powerful hoisting engines, water tube boilers, &c., and the screening appliances of such a character as enable all grades and classes of coals to be properly prepared for market.

The Cumberland Coal Field, which is the most westerly of the coal districts of the Province, lies, for the most part, adjacent to Chignecto Bay, the more northerly and westerly of the two arms into which the upper part of the Bay of Fundy is divided.

The coal measures outcrop on the shores of Cumberland basin, run eastward into the land for about eighteen miles and outcrop again before they enter upon the return outcrop, running westward to the sea shore. The northern outcrop has been systematically worked on the shore at the Joggins mines with a present annual output of about 80,000 tons on a seam yielding about 6 ft. of coal. The remainder of this side of the basin has not yet received much attention, but will, as the demand for coal increases, become more fully worked. The principal operations in this district are at the apex of the basin; as at Springhill, where the Cumberland Railway & Coal Co. is engaged in mining three valuable seams. The seams dipping at angles of from 10

to 35 degrees, are entered by slopes to a depth of 4,000 feet, and worked by shoots and "balances," and, in the case of the thinner parts of the seams, by long-wall. The extraction of pillars has been carried on systematically and with unusual success. As a certain amount of gas is evolved in these mines, no explosive is used in getting the coal. The ventilation is provided for by blow-down fans with numerous outlets.

The general composition of the coals of this district is about as follows :—

Moisture	1.46
Volatile combustible matter	33.69
Fixed carbon	59.35
Ash	5.50

They are very extensively used as a locomotive fuel and for coke and domestic purposes.

Colliery Output.—The output and sales of the various collieries for the fiscal years ended 30th September, 1895 and 1896 are given below. The returns for the twelve months will be found in the notices of the operations of the various companies.

Colliery.	District.	Output. — 1895.	Sales.		
			Round.	Slack.	Run of Mine.
Chignecto	Cumberland	660	474	56	....
Joggins	"	110,082	76,282	18,794	....
River Hebert	"	2,599	1,359	....	....
Springhill	"	381,032	74,399	128,983	120,877
Scotia	"	996	859	127	....
Acadia	Pictou	206,798	113,309	60,653	....
Intercolonial	"	209,538	141,113	53,709	....
Dominion	Cape Breton	905,671	690,648	91,228	27,342
Sydney	"	259,608	189,220	32,676	....
North Sydney	"	673	227	....	....
Cape Breton	"	10,344	8,451	243	....
Broad Cove	"	1,245	328	....	....
Total		2,089,245	1,296,669	386,469	148,219

Markets.—The markets found for the coal under the head of sales have been :—

Markets.	1891.	1892.	1893.	1894.	1895.	1896.
Nova Scotia	639,737	623,978	680,000	671,883	633,041	666,403
Quebec	775,286	746,037	863,744	877,743	740,098	795,060
New Brunswick	229,315	214,550	260,266	221,844	228,525	252,293
Newfoundland	108,617	94,999	77,651	97,378	63,232	94,236
Prince E. Island	67,473	56,638	57,593	63,734	81,492	63,000
United States	25,431	13,883	25,096	79,837	73,097	174,919
West Indies	4,086	2,849	1,508	5,526	11,872	.....
Other Countries	.....	.....	33	1,797	.....	1,222
	1,849,945	1,752,934	1,965,891	2,019,742	1,831,357	2,047,133

Colliery.	District.	Output. — 1896.	Sales. Round.	Slack.	Run of Mine.	Total Sales.
Chignecto ...	Cumberland .	304	214	10	.....	224
Joggins	"	59,125	42,301	9,059	.....	51,360
River Hebet...	"	4,203	2,178	335	.....	2,513
Scotia	"	1,085	831	204	.....	1,035
Springhill.....	"	411,320	193,310	145,169	29,172	367,651
Acadia	Pictou	198,884	110,003	60,438	.....	170,441
Intercolonial..	"	196,373	124,127	57,125	.....	181,252
Dominion	Cape Breton..	1,079,198	908,090	120,168	.....	1,028,258
Sydney	"	265,142	194,110	33,989	.....	228,099
Greener	"	1,414	1,005	.....	.....	1,005
New Campbellton	"	16,483	14,496	.....	.....	14,496
Mabou	"	1,328	286	.....	.....	286
Broad Cove.	"	613	513	.....	.....	513
		2,235,472	1,591,464	426,497	29,172	2,047,133

Prices and Water Freights.—The following is a comparative statement of the prices of Sydney coal at Montreal from the year 1871 :—

Year.	Rate Freight to Montreal.	Price F.O B.	Sales, Montreal.	Year.	Rate Freight to Montreal.	Price O. F.B.	Sales, Montreal.
1871	$2.25 to $2. 50	.....	$3 90 to$4 35	1884	$1 50	$1 80 to $1 90	$3 10 to $3 20
1872	3 50	$2 00	6 75 to 7 00	1885	1 50	1 80	2 95 to 3 1)
1873	3 50	2 50 to $3.00	7 00	1886	1 40	1 50	2 95 to 3 10
1874	3 50	2 00 to 2.50	4 50	1887	1 25	1 50 to 1 60	2 95 to 3 10
1875	1 50	2 00 to 2.25	3 75 to 4 00	1888	1 40	1 45	3 00 to 3 20
1876	1 50 to $2.00	2 00 to 2.25	3 50 to 3 75	1889	1 65	1 50	3 15 to 3 30
1877	1 50 to 2.00	1 80	3 50	1890	1 40	1 60	3 00 to 3 20
1878	1 40 to 1.50	1 25 to 1.40	3 25	1891	1 25	1 60 to 1 70	3 20
1879	1 50	1 25 to 1.40	3 25	1892	1 co to $1 20	1 60 to 1 70	3 20
1880	1 50 to 1.75	1 25 to 1.40	3 25 to 3 50	1893	1 00 to 1 20	1 60 to 1 70	3 20
1881	1 50	1 50	3 50 to 3 75	1894	1 00 to 1 20	1 60 to 1 70	3 25
1882	1 50	1 60	3 75 to 4 00	1895	* 90 to 1 00	... .	.....
1883	1 50	2 00	3 75 to 4 25	1896	1 15	.....	3 00

In 1873 slack sold at $5,00 per ton.

* By tramps; time boats, $1.25.

Exports to United States.—The following table of exports to the United States is taken from the Report of the Department of Mines for 1895 :—

Years.	Tons.	Duty.	Years.	Tons.	Duty.
1850	118,173	24 ad.	1674	138,336	75c.
1851	116,274	"	1875	89,746	"
1852	87,542	"	1876	71,634	"
1853	120,764	"	1877	118,216	"
1854	139,125	Free.	1878	88,495	"
1855	103,222	"	1879	51,641	"
1856	126,152	"	1880	123,423	"
1857	123,335	"	1881	113,728	"
1858	186,743	"	1882	99,302	"
1859	122,720	"	1883	102,755	"
1860	149,289	"	1884	64,515	"
1861	204,457	"	1885	34,483	"
1862	192,612	"	1886	66,003	"
1863	282,775	"	1887	73,892	"
1864	347,594	"	1888	30,198	"
1865	465,194	"	1889	29,986	"
1866	404,252	"	1890	50,854	"
1867	338,492	$1.25	1891	25,431	"
1868	228,132	"	1892	13,883	"
1869	257,485	"	*1893	16,099	"
1870	168,180	"	†1894	79,837	40c.
1871	165,431	"	1895	73,097	"
1872	154,092	75c.	1896	174,919	"
1873	264,760	"			

SHIPMENTS FROM SYDNEY HARBOR.

The shipments from Sydney Harbor since 1867 in tons of 2,240 lbs. are :—

Year.	Tons.	Year	Tons.
1867	100,042	1882	310,987
1868	101,347	1883	334,90
1869	100,638	1884	312,140
1870	116,250	1885	316,458
1871	122,946	1886	368,823
1872	172,230	1887	497,565
1873	253,402	1888	430,333
1874	171,813	1889	467,555
1875	179,047	1890	506,688
1876	111,093	1891	572,109
1877	119,862	1892	584,538
1878	138,608	1893	657,000
1879	147,051	1894	800,733
1880	167,288	1895	937,716
1881	278,204	1896	1,250,000

Note—The quantities given for the years 1852 to 1872 are on the authority of the Board of Trade, Philadelphia, and are probably under-estimated.

* Nine months only.

† After August 1st, 1894, duty on Round Coal 40 cents, on Culm or Slack, 15 cents.

Fiscal year begins Oct. 1st and ends Sept. 30th.

Railway Deliveries.—The following table shows the number of tons of coal carried over the Intercolonial Railway from the Nova Scotia collieries to Chaudiere Junction and St. John for points west thereof, and to local stations in each year since the commencement of the trade in 1876 :—

Year.	For the West.		To Local Stations.	Total.
	Via Chaudiere.	*Via* St. John.		
1876-77	.....	.....	103,420	103,420
1877-78	.....	.....	97,043	97,043
1878-79	300	.....	112,232	112,532
1879-80	1,097	.....	135,369	136,466
1880 81	6,102	4,022	174,483	184,607
1881-82	18,015	11,779	218,364	248,158
1882-83	12,837	22,206	227,380	262,423
1883-84	22,014	19,534	252,014	293,562
1884-85	133,440	1,773	213,791	349,004
1885-86	171,170	21,150	215,272	407,592
1886-87	192,871	27,536	233,178	453,585
1887-88	183,704	36,228	309,727	529,659
1888-89	160,026	27,923	338,538	526,487
1889-90	164,453	25,126	366,967	556,546
1890-91	113,996	39,213	344,829	498,038
1891-92	35,447	5,918	392,441	433,806
1892-93	136,868	3,775	402,653	543,296
1893-94	102,273	8,028	367,390	478,691
1894-95	67,082	7,865	310,253	385,200
1895-96	53,124	9,681	369,708	432,513

Water Deliveries on the St. Lawrence.

Formerly sailing vessels were employed carrying coal from the Maritime ports up the St. Lawrence ; and the tramp steamers employed were less than 1,500 tons capacity. Now the trade is monopolized by steamers specially designed to carry large cargoes. In 1894, forty-nine steamers, eighteen sailing vessels and two barges were employed in the St. Lawrence-Maritime trade, when $369,688 were distributed for labor in transportation, trimming cargo, handling, etc., and $55,556 for wharfage, and $55,333 for pilotage, in all a total for these three items of $480,607. The following is a statement of the number and tonnage of steamers carrying coal from the Maritime ports to Montreal, (and does not include the number discharging their cargoes at Quebec, Sorel and Three Rivers) and the quantity of Maritime coal in tons of 2,240 lbs. delivered at all the St. Lawrence ports :—

Nashwaak River
CANADA EASTERN R.R.
FREDERICTON
CANADIAN PACIFIC R.R.
River
Little River
FRENCH LAKE
MAGHAPIT LAKE
John
Salmon River
NEWZION
NEWCASTLE
FLOWERS COVE
GRAND LAKE
Coal Creek
CHIPMAN
CENTRAL R.R.
GAGETOWN
Map of
GRAND LAKE
COAL-FIELD
NEW BRUNSWICK
Scale — 4 Miles - 1 Inch.
Coalfield. & Coal Openings • Lower Carb.ous L.
Devonian D

NUMBER AND TONNAGE OF STEAMERS CARRYING COAL FROM MARITIME PORTS TO MONTREAL.

YEAR.	TO MONTREAL ONLY.		Quantity of Coal carried to all St. Lawrence ports.—tons 2240 lbs.
	No. Steamers.	Registered Tonnage.	
1876	87	47,199	117,302
1877	72	39,277	95,111
1878	42	21,872	83,709
1879	62	40,686	153,818
1880	88	62,688	237,934
1881	104	90,040	258,503
1882	168	136,036	353,000
1883	191	164,982	420,000
1884	161	124,377	355,000
1885	142	117,436	360,000
1886	175	150,784	377,500
1887	224	194,028	482,103
1888	213	195,598	517,559
1889	184	174,076	467,525
1890	252	235,722	543,656
1891	272	260,702	602,325
1892	289	275,040	626,087
1893	333	324,188	737,891
1894	349	362,945	796,282
1895	256	296,256	637,519
1886	265	305,976	706,457

NEW BRUNSWICK.

The only productive coal area in New Brunswick is that situated in Queen's County, about the head of Grand Lake, and limited quantities are mined here annually for local consumption and on a small scale for export. The product may be described as bituminous coking coal giving a rather large percentage of ash. It is excellently adapted for blacksmiths' use and is used with satisfaction to the consumers as a house coal.

The result of a geological survey of the carboniferous area of New Brunswick has been to show that it is extremely probable that the beds referred to, which occupy such a large area in Queen's County, practically constitute the only seams of coal in the Province which can be considered available for practical working. Other beds, it is true, have been found at various points, but where seen they are nowhere of any great thickness, and as they for the most part occur in what we believe to be the limestone grit, there does not seem to be any good reason to hope that thicker beds will be found. Borings too, though they have not been numerous enough to prove that the lower coal measures may not occur in depression in the underlying rocks, yet they do show that these lower beds are certainly wanting over all those areas where they have been made, and we are warranted in believing that their existence here at all is very doubtful, and that if they do occur it can only be in troughs of very limited extent.

The large area covered by the seams which are now worked, and their easy accessibility, render them well worthy of consideration in reckoning up the available mineral resources of the Province.

Though the exaggerated reports of the enormous value of these coal beds which were current some years ago have, with our increase in actual knowledge of the facts, been long discredited, yet there remains the knowledge that we have here a coal field easily accessible and capable of yielding a large amount of coal of good quality. The workable beds have been estimated to contain, if they keep about the same average thickness over the area, over 150,000,000 tons of coal.

Mining operations have been continued on a small scale for over thirty years, with an annual output of 4,000 chaldrons. Not more than 125,000 tons have been mined in the district.

With the present limited output the coal costs the miner about 80 cents per ton, including timber, stores, etc.

The cost of teaming the coal to the lake shore, (three to six miles) is from 45 to 70 cents per ton. Cost of shipment to St. John or Fredericton, by wood boats, 70c. per ton. Total cost in St. John or Fredericton, $2.20 per ton.

Manitoba and North-West Territory.

The coal fields of Manitoba and of the North-West Territories are thus described by Dr. G. M. Dawson, Director of the Geological survey of Canada:—"The known area of true and lignite coals of the best quality extends along the base of the Rocky Mountains from the 49th parrellel to the vicinity of Peace River, a distance of 500 miles, with an average width of, say, 100 miles, giving a total area of 50,000 square miles. It is not intended to affirm that the whole of this area is continuously underlain by coal, but outcrops of coal are so general throughout it, that, taken in connection with the character and the regularity of the strata, it may safely be stated that it is, throughout a coal field. An additional area, stretching eastward as far as the Souris River and Turtle Mountains, yielding lignites only, but these often of very good quality and well fitted for local uses, may be roughly estimated at 15,000 square miles." These fields, owing to the limited demand of their produce, have hardly been touched as yet; but, when the scarcity of timber over a great part of the area in question is considered, it is evident that their existence is of the greatest moment in relation to the future settlement of the North-West.

The areas within the Rocky Mountains, though small as measured by miles, contains much coal of the best quality. One of these areas, on the Bow and Cascade rivers, has been found to hold several good seams of anthracite of good quality. The principle of these are at Marsh Mine, near the south end of the field, 1¾ miles from the main line of the Canadian Pacific Railway, and 550 ft. above its level. Two thick seams of coal are found, one 17 ft. (with 15½ ft. coal), and the other 9½ ft. (with 8½ ft. coal) in thickness. About three miles to the north-west of Marsh Mine and about a mile from the railway, there are eight openings into outcrops of workable seams. Six of these are apparently one above the other, containing 30 ft. coal. At Canmore, about a mile from the railway station and about 100 ft. above it, there are

three seams, one 4 ft., another 12½ ft., and the third 16 ft. in thickness. At Anthracite, close to the railway, three seams are being worked, respectively 6 ft. (4½ ft. coal), 3½ ft. (3 ft. coal), and 5½ ft. (4 ft. coal), in thickness; at Moberly, which is near the north-west end of the field, there is a seam of coal 4½ ft. thick (3 ft. 8 in. coal). Two of these seams near Canmore are vertical, apparently from some disturbance, but with these exceptions they all dip to the south-west at angles ranging from 12 to 60 degrees. The relation of the various outcrops to Canmore mines can best be ascertained by drifting.

These mines were opened first by the Canadian Anthracite Coal Co., Ltd., which leased them in 1891 to the H. W. McNeill Co., Ltd., the present operator, the coal finding a ready market as far east as Winnipeg. The true anthracite character of coal is shown by its yielding, on analysis, 87 per cent. of fixed carbon, by its burning with a clear, smokeless, almost flameless glow and by its ash being white and non-ferruginous.

The late Mr. Ralph Moore, M.E., of Glasgow, at one time Her Majesty's Inspector of Coal Mines for Scotland, says in a report on these mines, which he visited in 1889, that there is coal sufficient for an output of two thousand tons a day for over one hundred years. John R. Hoffman, and R. C. Luther, of Pottsvale, Pa., mining engineers of the Philadelphia and Reading Coal Company, have both minutely examined the property and estimate the contents of coal at one hundred and fifty millions of tons minimum.

British Columbia.

The principal coal mining district is at Nanaimo, on Vancouver Island. Work was begun here in 1852, and, before the close of 1853, 2,000 tons are reported to have been shipped, chiefly to San Francisco. The price of coal at Nanaimo was at this time $11, and at San Francisco $28 a ton. The Hudson Bay Company, under the name of the Nanaimo Coal Company, continued to work the mines thus opened until 1861, when they were sold to the Vancouver Coal Mining and Land Co., an English Syndicate, by which they are still operated.

The total output of coal from the Province for the year ended 31st December, 1896, was 846,235 tons, of which 634,237 tons were exported. The exports are principally to San Francisco, San Pedro and San Diego in California, and smaller quantities are shipped to the Hawaiian Islands, to China, Japan and other places. In the various ports of the Pacific Ocean, the coal from British Columbia comes into competition with coal from Puget Sound in the State of Washington, which because of the high protective duty established by the United States is enabled to achieve a large sale in California, nothwithstanding its inferior quality. It has also to compete with shipments from Great Britain, brought out practically as ballast, with the coals of New Castle, in New South Wales, with coal from Japan; and in regard to the Pacific ports of the Russian empire, with coal raised by convict labor at Duai, at Saghalien Island in the Okotsk Sea. It is sufficient guarantee for the quality of the coal of British Columbia that it is able to hold its own against all these competitors. In an excellent address to the Royal Colonial Institute, Dr. Dawson summarises the

coal areas of British Columbia as follows:—"Though Nanaimo has been from the first the chief point of production of coal, work has been extended within the last few years to the Comox district, also situated on Vancouver Island; while other promising coal bearing tracts have been in part explored and examined on this Island, and on the Queen Charlotte Islands. These particular coal regions, bordering upon the Pacific Ocean, have naturally been the first to be employed, but they by no means exhaust the resources of the province in respect to coal. Deposits of good bituminous coal are known also in the inland region, and some of these in the vicinity of the line of railway are now being opened up, while others, still far from any practical means of transport or convenient market, have been discovered, and lie in reserve. One of the most remarkable of these undeveloped fields is that of the Crow's Nest Pass, in the Rocky Mountains, where a large number of superposed beds of exceptional thickness and quality have been defined.

"Besides the bituminous coals, there are also in the interior of the province widely extended deposits of lignite coals, of later geological age, which, though inferior as fuels, possess considerable value for local use. In the Queen Charlotte Islands anthracite coal is found, but has not yet been successfully worked. The coals of British Columbia may, in fact, be said to represent in regard to quality and composition, every stage, from hard and smokeless fuels, such as anthracite, to lignites and brown coals like those of Saxony and Bohemia. Many features of interest to the geologist might be mentioned in relation to these coal deposits, did time permit, but it must not be forgotten to note one principal fact of this kind—the very recent geological age to which all the coals belong. None of the coals of British Columbia are as old as those worked in Great Britain; they are in fact all contained in the cretaceous and tertiary rocks."

The same eminent authority estimates the extent of the coal fields to be:—

	Square Miles.
Nanaimo coal basin (coals), approximately correct.....	200
Comox coal basin (coals), rough approximation.....	700
Queen Charlotte Islands, very rough approximation.....	800
Tertiary liginite bearing rocks in different parts of British Columbia, south of the 54th parallel of latitude (very rough approximation).....	12,000

Production of Coal and Coke in British Columbia.

The following statement in tons of 2,240 lbs., shows the production of coal and coke as officially reported to the Government of British Columbia. The production of coke is small, but will now be rapidly increased when the coke ovens, now being perfected at the Union colliery, Comox, and the coking coal of the Crow's Nest Pass, will have begun the regular supply of this fuel to the smelting centres.

For the last two years the output of coal has been declining by reason of the

increasing competition of British and American coal to the Pacific coast markets of the United States, where most of the coal from British Columbia is sold :—

Year.	Long Tons.	Value.	Year.	Long Tons.	Value.
1836-52	10,000	$40,000	1878	170,846	522,538
1852-59	25,396	101,592	1879	241,301	723,903
*1859	1,989	7,956	1880	267,595	802,785
1860	14,246	56,988	1881	228,357	685,171
1861	13,774	55,096	1882	282,139	846,417
1862	18,118	72,472	1883	213,299	639,897
1863	21,345	85,380	1884	394,070	1,182,210
1864	28,632	115,528	1885	265,596	1,096,788
1865	32,819	131,276	1886	326,636	979,908
1866	25,115	100,460	1887	413,360	1,240,080
1867	31,239	124,956	1888	489,301	1,467,903
1868	44,005	176,020	1889	579,830	1,739,490
1869	35,802	143,208	1890	678,140	2,034,420
1870	29,843	119,372	1891	1,029,097	3,087,291
1871-2-3	148,459	493,836	1892	826,335	2,479,005
1874	81,547	244,641	1893	978,294	2,934,882
1875	110,145	330,435	1894	1,012,953	3,038,859
1876	139,192	417,576	1895	939,654	2,818,962
1877	154,052	462,156	1896	846,235	2,327,145

or a total production to date of 11,248,759 tons of a value of $33,926,602.

Coke 1,565 tons, of a value of $7,825. * Two months only.

Coal Trade of the Dominion.

Imports of anthracite and bituminous coal for home consumption during the fiscal year ended 30th June, 1896 :—

Fiscal year ended 30th June, 1896.	From Great Britain.		From United States.		Total Imports.	
	Tons.	Value.	Tons.	Value.	Tons.	Value.
Anthracite	4,341	10,524	1,570,014	5,656,572	1,574,355	5,667,096
Bituminous	56,981	89,820	1,481,508	3,209,205	1,538,489	3,299,025
" Slack	29,046	12,708	181,340	41,034	210,386	53,742
Coke	1,587	1,991	60,025	201,835	61,612	203,826

By Provinces.	Anthracite.	
	Tons.	Value.
Ontario	1,062,702	3,865,275
Quebec	392,868	1,417,651
Nova Scotia	42,325	132,848
New Brunswick	59,196	172,613
Manitoba	13,892	66,194
British Columbia	419	3,910
Prince Edward Island	2,953	8,605
Total	1,574,355	5,667,096

By Provinces.	Bituminous.		Bituminous Slack		Coke.	
	Tons.	Value.	Tons.	Value.	Tons.	Value.
Ontario	1,449,752	3,113,730	177,245	39,881	45,852	143,259
Quebec	72,771	130,375	33,133	13,795	6,433	21,307
Nova Scotia	886	2,422	5	33	....	....
New Brunswick	1,966	4,733	....	....	....	....
Manitoba	9,792	28,720	3	30	195	980
British Columbia	3,322	19,045	....	3	9,132	38,280
P. E. Island	....	....	....	....	....	....
Total	1,538,489	3,299,025	210,386	53,742	61,612	203,826

Exports of Canadian Coal, 1868-1896.

Year ended 30th June.	Exports of Coal.		Year ended 30th June.	Exports of Coal.	
	Quantity.	Value.		Quantity.	Value.
	Tons.	$		Tons.	$
1868	265,335	640,708	1883	444,142	1,158,705
1869	440,308	763,262	1884	451,631	1,201,172
1870	286,707	588,799	1885	479,706	1,468,166
1871	318,287	662,451	1886	493,508	1,416,160
1872	295,522	578,691	1887	527,004	1,522,272
1873	404,757	951,886	1888	563,341	1,730,466
1874	418,357	1,343,739	1889	645,515	2,232,154
1875	288,176	937,923	1890	715,364	2,447,936
1876	277,832	977,188	1891	833,684	2,916,465
1877	249,536	855,968	1892	945,125	3,195,467
1878	340,127	1,210,689	1893	908,232	3,114,558
1879	315,793	937,268	1894	995,998	3,321,565
1880	344,694	1,013,899	1895	1,110,567	3,578,195
1881	420,055	1,123,091	1896	1,025,060	3,249,069
1882	421,311	1,078,704			

COAL passed through the Welland Canal from 1885 to 1895, inclusive.

Year.	From United States Ports. to United States Ports.		From United States Ports to Canadian Ports.		Total Tons.	Amount of Tolls Paid. — Rate 20 cents a ton.
	Up.	Down.	Up.	Down.		
	Tons.	Tons.	Tons.	Tons.		$ cts.
1885	193,442	4,974	10,321	31,350	240,087	48,017 40
1886	184,564	5,400	22,187	49,742	261,875	52,375 00
1887	81,617	1,163	26,775	25,968	135,523	27,104 60
1888	172,381	878	17,365	27,183	217,807	43,561 40
1889	226,352	1,124	12,036	25,931	265,443	53,188 60
1890	116,616	615	17,280	22,781	202,372	38,222 30
1891	185,190	1,382	17,374	20,698	224,644	44,928 20
1892	183,244	651	12,391	15,330	211,616	42,284 13
1893	204,704	2,123	8,325	17,944	233,096	46,619 20
1894	187,794	727	1,269	13 947	203,737	40,789 93
1895	148,887	603	1,565	7,807	158,866	31,773 05

NOTE—Tolls on soft coal passed down the Welland Canal, during the season of 1890, were reduced from 20 to 10 cents a ton, per O.C. 11th May, 1890, for the season of 1890 only, the rate for 1891, 1892, 1893, 1894 and 1895 being 20 cents a ton for passage either eastward or westward.

COAL passed through the whole length of the St. Lawrence Canals during the seasons from 1885 to 1895 inclusive.

Year.	Quantity passed up Free of Tolls.	Quantity passed down to Montreal.	Total Quantity passed up and down.	Amount of Tolls on Quantity passed down to Montreal.
	Tons.	Tons.	Tons.	$ cts.
1885	5,035	122,829	127,864	18,424 35
1886	3,301	118.802	122,103	17,820 70
1887	7,579	121,618	129,197	18,242 70
1888	8,341	123,050	131,391	18,423 90
1889	5,360	124,290	129,650	18,604 90
1890	6,538	135,168	141,706	20,275 20
1891	7,951	141,701	149,652	21,255 15
1892	7,543	157,134	164,677	23,570 10
1893	2,285	147,139	149,424	22,070 85
1894	16,213	169,552	185,765	25,432 80
1895		165,151	165,151	24,772 65

ACADIA COAL CO., Ltd.

Incorporated by Act of the Legislature of Nova Scotia. Authorized Capital, $4,000,000; $3,846,100 issued unassessable. No bonds or mortgages.

Directors :

J. W. Clendenin, *President*, 1 Broadway, New York.

Bryce J. Allan,	Thomas H. Hubbard,
H. Montague Allan,	Johnston Livingston,
Hugh Andrew Allan,	J. Pierpont Morgan, Jr.
James W. Clendenin,	Edwards S. Sandford,
William Henry Davies,	George G. Ward.

Head Office : Henry S. Poole, F.G.S., M.E. General Manager, Stellarton, N.S
J. George Rutherford, M.E., Asst. General Manager.

Formed to acquire and work coal areas in Pictou county and elsewhere in the Province of Nova Scotia.

Acadia Colliery, at Westville, 3 miles from Stellarton. *Mine Manager*, James Maxwell; *Overman :* J. Patton.

Seam of 10 ft. worked : dip averages 27 degrees; slope, 3,900 ft.; extreme vertical depth, 1,700 ft.

System of working : in lifts of 300 ft., longwall with timber packs of 5 ft. square.

Ventilation by fan, 24 ft. by 8 ft., iron casing; engine 20 in. by 20 in. cut-off; 17 in. water-gauge, barometer, etc.; Liveing's gas indicator.

Lamps—Mueseler and Marsaut.

Hoisting engine on slope, pair 32 in. cyl., 60 in. stroke direct; drum, 10 ft.

Pumping—Duplex compound condensing, 22 by 11 in. x 24 in.; rams 5.5 in.; column length, 2,400 ft.; vertical head, 990 ft.; wrought pipe tarred 6 in. upset ends vanishing threads, metal flanges, no leaks; steam pressure on top, 105 lbs., pipe 4 in. covered; air feeder added to air chamber. Auxiliary direct acting 11 x 12 in. x 4 in. pump driven by compressed air, at bottom of pit head 600 ft.

Two air compressors, 16 in. and 20 in. with receivers at bank and in pit; air pipe, 4 in., length, 4,000 ft.

Boilers—Water-tube; fuel, culm.

Screens, double—Primary 2 in.; secondary ¾ in. apart, curved; 5 sizes of coal; elevator, picking table, shaking screens.

Albion Colliery, at Stellarton on I. C. Railway; J. Dunbar, *Manager;* A. McDonald, *Overman*. Railway second built in America; locomotives include "Samson," built in 1838 (since sold); main seam, 38 ft. thick; 148 ft. lower, deep seam, 22 ft. thick : Foord pit, vertical, 900 feet deep; sunk to main seam; scene of explosion in 1880; loss of life, 44; workings now full of water; machinery massive; hoisting engine, 38 in. cyls. 5 ft. stroke, 18 ft. dia. drum; Cornish pumps, 62 in. cyl., 9 ft.

stroke ; beam 34 ft. long, 7 ft. deep in the middle ; weight, 18 tons ; working barrel, 18 in. dia. ; pit head frame 50 ft. high ; independent condenser on hoisting engine. Fire has been in the old rise workings for 25 years.

Air-compressors in course of erection at time of explosion, and now not in use ; steam cyls., 36 in. ; dia., do., 40 in. ; stroke 6 ft. ; fly wheel, 22 ft. dia. ; weight 20 tons ; present workings in lower seams ; capacity 1,000 tons per diem ; ventilation by fans, the latter 30 ft. dia. by 10 ft. wide ; a new fan in course of erection at the third seam 18 ft., high speed, rope driven with compound engines ; lamps, Mueseler ; coal used for coking purposes ; 125 ovens ; bee-hive, 10 ft. dia. ; average pitch of seam, 22 degrees.

Vale Colliery, 6 miles east of New Glasgow. McBean seam worked by slope 3,100 ft. long ; dips 14° to 35°; vertical depth 1,600 ft., not working.

Six ft. seam ; slope, 2,400 ft. ; outcrop for 500 ft. left unworked. a new winning ventilated by compression fan, 16 ft. by 6 ft ; engine, 10 in. by 16 in.

PRODUCTION, 1896.

	Tons.
Total coal raised	199,303
Total coal sold	198,006
Total coke sold	2,773

LABOR, 1896.

Above ground	318
Below ground	477
Total	795

COAL DISPOSALS, 1891-96.

(As per Returns Furnished by the Company.)

DISTRIBUTION.	1891	1892	1893	1894
Nova Scotia	171,806	123,797	178,429	126,836
Prince Edward Island	33,577	21,354	24,500	25,950
Quebec	9,459	4,822	9,557	5,129
New Brunswick	18,885	16,268	19,329	7,199
Newfoundland	46	.....	.....	.....
United States	.....	.....	.....	.....
Other Countries	.....	.....	.....	270
St. Pierre Miquelon	.....	.....	.....	144
Colliery Employees	6,118	5,496	5,803	5,514
Bunker Steamers	15,250	7,662	12,954	.....
Engines and Coke Ovens	.....	73,142	22,634	55,400
	255,231	252,541	273,206	226,442

COAL DISPOSALS, 1891-96—Continued.

DISTRIBUTION.	1895	1896
Nova Scotia	113,674	121,220
Prince Edward Island	18,916	23,540
Quebec	3,152	1,020
New Brunswick	6,242	4,214
Newfoundland	92	138
Colliery Employees	5,243	6,065
Bunker Steamers	7,427	12,750
Engines and Coke Ovens	48,458	29,059
Total Tons	203,204	198,006

ALBERTA RAILWAY AND COAL CO.

Incorporated 20th January, 1889.

Authorized Capital:

4% Prior lien debenture stock	£ 125,000
4% A debenture stock	250,000
5% B debenture stock	750,000
Total	£1,125,000
Preference shares	$1,000,000
Ordinary shares	100,000

(The capital issues of the Company were re-arranged by Act of Parliament in 1895.)

The accounts for the year ending 30th June, 1896, show a net profit of £2,671, 13s., 4d.

Directors:

Elliott T. Galt, *President*, Lethbridge, N.W.T.

Col. R. R. B. Wodehouse, *Vice-President*, London, Eng.
W. Burdett-Coutts, M.P., London, Eng.
Edward Crabb, London, Eng.
T. C. Farrer, London, Eng.
Edwin Waterhouse, "
W. M. Ramsay, Montreal, Canada.
Thos. Davidson, "
Sir R. W. Cameron, New York, U. S. A.

CANADIAN OFFICE:

Elliott T. Galt, President, Lethbridge, N.W.T.; W. D. Barclay, Manager; Robt. Simpson, Colliery Supt.; C. A. Magrath, Land Commissioner.

Head Office:

Geo. Edwards Secretary, 37, Old Jewry, London, Eng.

Formed to take over and control the lands, works, mines and railways formerly owned and operated by the North Western Coal and Navigation Co. Ltd.

The Company owns the railway from Lethbridge to Great Falls, Montana, U.S.A., 200 miles in length, three feet gauge, equipped with 21 locomotives and 402 cars.

The railway from Lethbridge to Dunmore, 110 miles in length, likewise narrow gauge, was changed to standard gauge during the summer of 1893 and sold to the C. P. R., and is now being operated as a portion of that Company's system.

The Company owns the Lethbridge Collieries at Lethbridge, in the District of Alberta, N.W.T. The workings consist of three shafts, sunk from the level of the prairie to the coal, a distance of about 300 feet, and situated about half a mile from each other.

The system of mining the coal is that known as "pillar and stall," and consists of double entries, each six feet wide, driven parallel, with a pillar of coal of not less than 30 feet between. Every 400 feet a new pair of entries are extended into the coal parallel to the first pair, and along each individual entry a room is turned off every 34 feet, and driven at right angles to and in the opposite direction from the adjoining entry. At a distance of 30 feet the room is opened out to a width of about 20 feet, and continued into the coal until it reaches its maximum depth from the entry, viz., 200 feet, there meeting a room which has been taken a similar depth from the next pair of entries, either above or below, as the case may be. After carrying rooms to their full depth, the miner returns, withdrawing the pillar between his and the adjoining room. There are practically two seams of coal worked. These are separated by a parting of fireclay, varying from one to two inches. The lower bench coal has a thickness of 2 ft. 8 in., while the upper bench is 1 ft. 10 in.

The mode of ventilation is by means of two Murphy fans, 6 ft. in diameter. These fans will either exhaust the air from the shaft or force it down, as required by the state of the weather. The reversing of the current of air is made by opening or closing certain openings. The speed of the fans is usually about 200 revolutions per minute. The winding engines for these shafts are two 20-inch cylinders, direct acting, on a spirally grooved drum and excellent brake connection. The pit head frame, screening and general arrangements are of the most modern type, including a safety clutch on the cage, so that if the wire rope was to break, the cage would only descend a few yards until the clutch acted on the guides of the cage, stopping any further descent.

The Company have recently introduced coal cutting machines in their No 3. shaft, consisting of eight Sergeant and eight Legg coal cutting machines; two compressors, 20 x 24 cylinders.

The workings are sufficiently developed so as to permit the present output of 1,000 tons daily to be increased on the shortest notice to 1,500 tons.

The output of coal in 1885 was 22,000 tons; in 1895, 110,522 tons; in 1896, 116,511 tons.

The Company has extensive machine shops, equipped with machinery suitable for all classes of repairs.

The acquirement and development of the properties has caused an expenditure of about $5,000,000, and in the services of the company there are on the average about 600 men employed, for whose accommodation the company has erected dwellings.

The Company markets its coal at no less than 193 points in Manitoba, the Canadian North-West, British Columbia and in the States of Montana and Washington in the United States of America, the most distant selling point being 830 miles from Lethbridge.

The analysis of Galt coal is :—Carbon, 56.20 ; ash, 6.40 ; water, 4.90 ; volatile matter, 32.40.

The company's landed estate consists of 1,100,000 acres of farm and ranching land, situated in alternate townships in the District of Alberta, N.W.T. Of this, 750,000 acres have been transferred to the Lethbridge Land Company, an affiliated company, formed to improve, colonize and dispose of them.

BOSTON AND NOVA SCOTIA COAL CO., Ltd.

Incorporated by Act of the Legislature of Nova Scotia, May, 1893. Authorized Capital, $5,000,000, in shares of $100, of which $500,000 was reported to have been subscribed at the date of last report.

Directors :

Hon. John W. Candler, Boston, *President.*

John Russell Gladding, Providence, R.I. | John C. Cobb, Boston.
Hon. David S. Baker, Jr., Providence. | W. J. Fraser, Halifax.
John McKeen, Mabou, C.B. | A. C. Ross, North Sydney.
R. P. Fraser, Pictou, N. S.

Head Office :

66 State Street, Boston, Mass.

CANADIAN OFFICE :

A. C. Ross, Secretary, North Sydney, Cape Breton.

Formed to purchase, hold, lease and sell any coal, iron or other mineral properties, also earths, clays, stone or mineral substances and the product thereof, manufactured or otherwise, and to mine, quarry and prepare for sale by any process of manufacture, and sell the outputs and products thereof from such mines and properties, etc. The properties acquired by the company are the Broad Cove and Chimney Corner groups, situated in Inverness County, Cape Breton, Province of Nova Scotia, and contain an area of 30 square miles of coal lands. The mines are situated about 14 miles from Mabou, 35 miles from Orangedale station on the Intercolonial Railway, and 27 miles from shipping pier to be erected at Whycocomagh and Cariboo Cove, on the Straits of Canso. In 1894 the plans of the com-

pany were altered so as to make Mabou Harbor, 14 miles from the mines, a shipping port. This will necessitate extensive dredging in Mabou Harbor, for, while inside the main harbor there is ample sea room and plenty of water, the channel leading to it for half a mile has a depth of 14 ft. only. This change has necessitated an entirely new location of the railway, as the old line was some 4 miles from the present proposed shipping pier. The new location was made during the past summer, the intention still being to build the line through to a junction with the I. C. Ry. at Orangedale, a distance by the new route *via* Mabou of 40 miles. The property includes a very extensive and valuable brown free-stone quarry on the line of their railway about 4 miles from tide-water at Whycocomagh.

BRITISH COLUMBIA COAL, PETROLEUM AND MINERAL CO., Ltd.

Incorporated 25th March, 1889. Authorized Capital, $4,000,000, divided into 40,000 shares of a par value of $100 each.

Directors :

Lt.-Col. James Baker, M.P.P., *President.*

Col. E. G. Prior, M.P. | B. W. Pearse. | A. W. Vowell. | E. Hanson. W. Hanson. | W. Fernie. | J. A. Gemmill.

F. B. Pemberton, *Secretary.*

Head Office: 45 Fort Street, Victoria, B.C.

This company owns 11,169 acres of coal lands, situate near Martin Creek, and also near Morrissey Creek, in the East Kootenay District, Province of British Columbia. On the easternmost property, near Martin Creek, containing 3,969 acres, there are fifteen seams of coal, four of which are a very valuable cannel or gas coal. The remaining seams are bituminous and admirably adapted for coking. In the western-most property of 7,200 acres, a distance of 12 miles from the former property, there are 12 superposed seams of coal cropping out of the side of the mountain, varying from 2 to 30 ft. in thickness. Up to 1st Dec., 1895, $100,000 have been expended on prospecting and preliminary development, but mining on a more extensive scale will not be begun until better shipping facilities have been provided. An analysis of a sample of fast coking gave : —

Hydroscopic water	1·89
Volatile combustible matter	30·41
Fixed carbon	63·33
Ash	4·37

BROAD COVE COAL CO., Ltd.

Incorporated by the Nova Scotia Legislature, February 12th, 1894. Authorized Capital: Bonds, $1,500,000; Preferred Stock, $1,500,000; Common Stock, $1,500,000. Amount reserved in the treasury for future needs of the Company: Bonds, $700,000; Preferred Stock, $400,000; Common Stock, $400,000.

Officers:

John M. Raymond, *President.*

Alpheus B. Alger, *Vice-President.* | Wm. Penn Hussey, *Treas. & Gen. Man.*
Edgar S. Buffon, *Secretary.* | Warren D. King, *Electrical Engineer.*

Directors:

W. H. Munro, Martha's Vineyard, Mass. | Geo. W. Gale, Boston, Mass.
John Y. Payzant, Halifax, N.S. | Hon. John M. Raymond, Salem, Mass.
Warren D. King, Peabody, Mass. | Hon. A. B. Alger, Cambridge, Mass.
Edgar S. Buffum, Salem, Mass. | J. R. Naegeli, Zurich, Switzerland.

William Penn Hussey, Danversport, Mass.

Head Office: 70 Kilby Street, Boston.

Mines Office: Broad Cove, Cape Breton.

This company controls four square miles of coal lands at Broad Cove, in the county of Inverness, Cape Breton, upon which there are twelve seams, ranging in thickness from two to fourteen feet. All the seams are of the bituminous variety, of superior quality, admirably adapted for steam and domestic purposes. During the past summer the company built two and a half miles of railway, connecting the openings on the different seams with the harbour at McIsaac's Lake. Four levels have been run in on the larger seams, from which a large quantity of coal can be mined daily. The channel between McIsaac's Lake and the Gulf of St. Lawrence has been cut through by the company, and in the spring will be dredged to a sufficient depth to admit large vessels. This harbour, when completed, will be the only deep water harbour on 90 miles of coast line, and will be of immense value as a harbour of refuge.

CANADA COALS AND RAILWAY CO., Ltd.

Incorporated by Act of the Legislature of Nova Scotia, 1892. Capital Stock, $750,000. Bonds, $750,000.

Directors:

S. Finlay, *President.*

— Hanson. | S. H. Ewing. | E. W. Wilson.
A. F. Galt | E. Hanson. | R. Wilson Smith.

Mines Office: Robt. Archibald, General Manager, Joggins Mines, N.S.
Head Office: 157 St. James Street, Montreal.

Formed to mine, quarry, work, win and prepare for sale, by any process, and to carry, sell and deal in coal, iron and other minerals, etc. The company controls an area of fifteen square miles, upon which is situated the Joggins Colliery, at Joggins Mines, in the County of Cumberland, Province of Nova Scotia.

COAL DISPOSALS.

	1892 Tons.	1893 Tons.	1894 Tons.	1895 Tons.	1896 Tons
New Brunswick	41,553	48,750	56,558	55,435	30,782
Nova Scotia.....	5,817	10,793	11,894	9,624	4,638
Quebec	16,497	23,774	15,800	20,371	13,260
United States.....	395	248	7,347	2,457	555
P. E. Island.....	.....	.....	401	418	118
Colliery employees, engines, etc.....	4,905	7,685	10,029	13,381	7,202
	69,167	91,250	102,031	101,686	56,555

Colliery eleven miles from Maccan station, on the main line of the Intercolonial railway, connected by a standard guage railway ; also one mile from Joggins wharf, on Chignecto Bay, connected by tramway. Rolling stock comprises two locomotives, four passenger coaches, 30 box and flat cars, etc.

Seam from 6 ft. to 8½ ft. worked ; coal from 4 ft. to 5½ ft. ; clay in centre of seam from 1 ft. to 3 ft. ; dip, 17° ; slope, 2,700 ft.

System of working—Longwall.

No. 3 slope—Ventilation by open fan 14′ dia. x 3′ 2″ broad ; No. 2 slope, furnace.

Lamps—Anton ; all open lights.

Winding engines—One double 18 in. x 42 in. geared 3 to 1 ; one 15 in. x 30 in. operating saw-mill ; one 14 in. x 24 in. hauls empty cars from pier to pit ; one double 3 in. x 10 in. used in sinking ; one 5 in. x 10 in., and one 7 in, x 16 in. ; at No. III. slope, one 17 in. cyl. x 36 in. stroke.

Haulage engine (tail rope) 10 in. cyl. and 12 in. stroke.

Pumps—Two Burrell-Johnson and one Northey, and one Northey force pump on surface.

Screens—Six in use.

Boilers—No. II. slope, 8 double flue 3 ft. x 30 ft. long, and two 5 ft. dia. and 30 ft. long ; No. III. slope, 2 double flue Lancashire boilers, 7 ft. dia. and 30 ft. long.

Employees—Above ground, 52 ; below, 168 ; total, 220.

CANADIAN ANTHRACITE COAL CO., Ltd.

Incorporated 28th October, 1886. Capital Stock, $1,000,000 fully subscribed and paid up.

Officers :

Hon. J. G. Thorpe, Cambridge, Mass., *President.*

O. H. Ingram, Eau Claire, Wis. | Archibald Stewart, Ottawa.
W. K. Coffin, Eau Claire, Wis. | L. Crannell, Ottawa, *Secretary*.

Head Office: The Molson's Bank Chambers, 14 Metcalfe St., Ottawa, Ont.

Formed to mine and extract coal, especially anthracite coal, in the Dominion of Canada, and generally to carry on the business of colliery proprietors, miners and engineers, in all their branches; and also the trade or business of carriers, by water, of coal, minerals and other freight from, to and within Canada, etc., etc. The company owns about 7,000 acres of coal lands in the district of Alberta, N. W. Territories. In 1891, the colliery and lands were leased for ten years to the H. W. McNeil Company, Ltd., notice of which will be found on another page.

CAPE BRETON COLLIERY.

Organized, 1893.

Owners:

J. T. Burchell. | J. E. Burchell.

Managing Owner: J. T. Burchell, New Campbellton, C.B., N.S.

The colliery worked was acquired by the present owners in June, 1893, but was worked as far back as 1861. It is situated at New Campbellton, at the mouth of the Big Bras d'Or Lake, Cape Breton County, Province of Nova Scotia. The property covers an area of three miles.

Seam of 4 ft. worked; dip, 12°; opened by slope, 1,000 ft. A. Ferguson, *Underground Manager.*

System of working—Pillar and room.

Ventilation by surface.

Lamps—Naked.

Hoisting engines—Pair, 12 in. x 16 in. cyl., single drum, dia. 5 ft.

Pumps—One Cameron, 15 in. cly., 9 in. plunger.

Boilers—Two locomotives, 50 h.p., and one tubular, 110 h.p.

Railway—One and a-half miles to shipping wharf, 3 ft. gauge, 40 lb. steel rails.

Ingersoll compressor, 16 x 18.

Five Ingersoll coal cutting machines.

COAL DISPOSALS.

	1894—Tons.	1895—Tons.	1896—Tons.
To Quebec	900	1,303	7,391
" Newfoundland	3,915	68	1,500
" Nova Scotia	6,036	4,763	5,094
" P. E. Island	2,331	624	535
" New Brunswick	898	368	580
" St. Pierre	.....	365	131
" Other countries	595	.....	534
" Colliery Consumption	2,098	1,680	1,474
" " employees	313	318	518
Total	17,086	9,489	17,757

CUMBERLAND RAILWAY AND COAL CO.

Incorporated 25th May, 1883. Authorized Capital $2,000,000. Bonds, $1,250,000, of which $1,000,000 have been issued.

Directors :

Robert Cowans, *President.*
Hon G. A. Drummond, *Vice-President.*

David Morrice. | J. R. Cowans.
H. R. Drummond. | W. J. Morrice.

Head Office : H. R. Drummond, Secretary, Imperial Building, Place d'Armes, Montreal.

Mines Office : J. R. Cowans, General Manager, Springhill, N.S.

C. Hargreaves, *Manager*, Colliery Department, - - -
W. D. Matthews, *Assistant to Manager*, Colliery Department,
G. Hall, *Mechanical Foreman*, - - - - - - } Springhill, N. S.
R. H. Cooper, *Cashier*, - - - - - - -
J. G. Aikman, *Superintendent*, Railway Department, Parrsboro, N.S.

Formed to acquire, work and develop coal lands, of which some 70 square miles are held under lease from the Government of Nova Scotia.

No. 1 Slope—W. D. Matthews, *Underground Manager.*

Seam of 8 ft. worked ; dip, 30° ; slope, 2,600 ft.

System of working, pillar and bord.

Ventilation—By blow-down fan, 20 ft. dia. ; width of blade, 8 ft. ; length of blade, 6 ft. 8 in. ; length of shaft, 11 ft. 3 in. ; dia. of shaft, 8 in.

Lamps—Marsaut.

Boilers—6 double flue, 45 h.p. each ; 4 tubular, 25 h.p., loco. pattern.

Hoisting engines—1 double-geared winding engine, cyls 18 x 36 in., drum 9 ft., dia.; 1 elevator engine, cyl. 9 x 18 in.; 1 electric light engine, cyl. 8 x 12 in., 1 engine driving slack conveyors, elevator and rotary screen, cyl. 12 x 30 in ; 1 fan engine, cyl. 15 x 30 in.; 1 pr. Link reversing geared haulage engines, cyls. 16 x 20 in.; with four 5 ft. drums to operate underground haulage system.

Pumps—1 Blake, 11½ x 28 x 36 in.; 1 Jeansville, duplex, 22 x 7 x 24 in.; 1 Jeanesville, duplex, 14 x 5½ x 12 in.; 1 boiler feed, Jeanesville, duplex, 8 x 4 x 8 ins.

Screens—Straight steel bars, 15 ft. long; rotary screen, 20 x 5 ft., with conveyors and elevators.

No. 2 Slope—W. Lorimer, *Underground Manager.*

Seam of 10 ft. 6 in. worked ; dip 30° ; length of slope, 3,000 ft.

System of working—Pillar and bord.

Ventilation—By blow-down fan, dia., 16 ft.; length of blade, 6 ft. 6 in.; width of blade, 4 ft. 10 in.; dia of shaft, 8 in.; length of shaft, 10 ft. 8 in.

Lamps—Marsaut.

Boilers—6 double flue, 40 h.p. each; 2 Lancashire flue, 70 h.p. each; one return tubular, 45 h.p.

Hoisting engines—1 double-geared winding engine, cyls. 22 x 36 in.; drum dia., 9 ft. 10 in.

Pumps—2 Allison, 14¼ x 30 x 72 in.; 1 boiler feed (Jeanesville), duplex, 8 x 4 x 8 in.

1 pr. Link reversing-geared haulage engines, cyl. 16 x 20 in., with four 5 ft. drums to operate underground haulage system.

1 direct acting fan engine, cyl. 12 x 30 in.

No. 3 Slope—M. Blue, *Underground Manager.*

Seams of 10 ft. worked; dip 28°; slope, 2,600 ft.

System of working—Bord and pillar and longwall.

Lamps—Marsaut.

Ventilation—By blow-down fan, 14 ft. dia.; length of blade, 3 ft. 6 in.; width, 6 ft. dia.; shaft, 7½ in., direct acting engine, cyl. 12 x 30 in.

Boilers—8 double flue, 40 h.p. each.

Hoisting engines—1 double-geared winding engine, cyl. 18 x 36 in.; dia. of drum, 9 ft.; 1 engine, cyl. 6 x 12 in., for hoisting timber to bank, and empty boxes up incline. 1 Robb-Armstrong, 11 x 12 in., for driving rotary screen.

1 pr. Link reversing-geared haulage engines, cyl. 16 x 20 in., with four 5 ft. drums to operate underground haulage.

1 direct acting fan engine, cyl. 12 x 24 in.

Pumps—1 Jeanesville compound duplex, cyls. 38 in. and 25 in., 10 in plungers, 36 in. stroke; 1 Cameron, 4 x 6 in.; 1 Jeanesville boiler feed, duplex, 8 x 4 8 in.

Screens—Straight steel bars 15 ft. long; rotary screen 20 x 5 ft., with conveyors and elevators.

Machine shop fitted with necessary tools for repairs to colliery plant, including eight locomotives, which are employed in hauling coal from the collieries, etc.

COAL SALES.

——	1889.	1890.	1891.	1892.	1893.	1894.
Nova Scotia	99,847	89,525	109,783	118,884	129,515	123,795
New Brunswick	93,527	107,047	123,652	105,472	133,290	126,057
Quebec	172,406	173,277	163,956	129,271	119,284	98,914
United States	9,986	7,734	8,815	8,374	9,050	36,205
	375,766	377,583	406,206	362,001	391,139	384,991

COAL DISPOSALS.

—	1895.	1896.
Nova Scotia	123,848¾	107,048
Quebec	123,443½	58,182
New Brunswick	64,828¾	172,188
St. Pierre	16,545½	.....
United States	.....	18,469
Total	328,666	355,887

DOMINION COAL CO., Ltd.

Incorporated by Act of the Legislature of Nova Scotia, 1st February, 1893. Authorized Capital, $18,000,000, Issued, 16,500,000. Common, $15,000,000. Preferred, 1,500,000. Authorized bonded indebtedness, $3,000,000, first mortgage bonds at 6 per cent. Issued, $3,000,000.

Directors:

Henry M. Whitney, Boston.

Sir Donald A. Smith, Montreal,
Henry F. Dimock, New York.
Hugh McLennan, Montreal.
F. S. Pearson, Boston.
W. C. Van Horne, Montreal.
Robert Winsor, Boston.
W. B. Ross, Q.C., Halifax.
Alfred Winsor, Boston.

General Offices: 95 Milk St., Boston.

Henry M. Whitney, *President.*
Alfred Winsor, *1st Vice-President.*
John S. McLennan, *Treasurer.*
F. S. Pearson, *Chief Engineer.*

Hon. David McKeen, *2nd Vice-President.*

CANADIAN OFFICE:

Glace Bay, Cape Breton, Nova Scotia.

Hiram Donkin, C. E., *Resident Man.*
J. R. Blackett, *Cashier.*
W. Blakemore, M. E., *Mining Eng.*
B. F. Pearson, Halifax, *Secretary.*

CANADIAN SELLING AGENTS:

Kingman Brown & Co., 14 Place Royale, Montreal, and M. R. Morrow, 171 Lower Water St., Halifax.

This company has been formed to carry on the business of mining, transporting and selling bituminous coal from the County of Cape Breton, Nova Scotia. It operates under a lease which gives a tenure of its mining property of ninety-nine years,

the royalty to the Nova Scotia Government for the whole period being fixed at a maximum of 12½ cents per ton with a minimum gross amount for each year to be paid on at least as many tons as were, in the year 1891, sold by all the mines included in the new company.

At 1st March, 1894, it had acquired an area of some seventy square miles of coal lands in Cape Breton upon which are the following collieries:—"Caledonia," (formerly the property of the Caledonia Coal and Railway Co., Lt.); "International," (formerly owned by the International Coal Co., Ltd.); "Gardiner," (formerly owned by Burchell Bros., Sydney); "Glace Bay," (formerly owned by the Glace Bay Mining Co., Ltd.); "Old Bridgeport," (formerly owned by the International Coal Co., Ltd.); "Reserve," (formerly owned by the Sydney and Louisburg Coal and Railway Co. Ltd.); Gowrie, formerly owned by the Gowrie Coal Mining Co., Ltd.); "Victoria," (formerly owned by the Low Point, Barrasois and Lingan Mining Co., Ltd.); the "Ontario" Colliery, and the "Sword," "Meagher" and other coal areas, teamers, lines of railway, etc., etc.

Caledonia Colliery—One mile from Little Glace Bay. *Manager*, John Johnston; *Underground Manager*, Thomas Johnston.

Phelan seam of 7 ft. worked; dip averages 1 ft. in 12; vertical depth of shaft, 185 ft.; length of east slope, 2,300 ft.; west slope, 2,500 ft.; west level, 4,000 ft.

System of working—Pillar and bord, and longwall.

Ventilation by Murphy fan, 12 x 6 ft., running 120 revolutions per minute and giving 100,000 cubic ft. of air.

Naked lights.

Boilers—3 Babcock.

Pumps—1 No. 7 Blake; 1 Northey Compound Duplex, capable of raising 1,000 gallons per minute to the surface.

Hoisting engines—1 20-in. double cylinder, 3 ft. 6 in. stroke, with 8-ft. drum; 1 double engine for hauling coal from deep, having 12-in. cylinder, 15-in. stroke.

Air compressor—1 20 x 30 piston inlet, Ingersoll make, with a capacity for 12 coal cutters, 28 coal mining machines, 1 longwall undercutter, 2 Stanley headers, 6 Jeffrey borers.

Coal heading machines: 2 Stanley.

Endless haulage, driven by one 22 x 54-in. horizontal engine, with friction gear.

Patent dumping cages and self-weighing tanks.

One Rand compressor, 48 x 30, with Corliss valves.

Steam water heater.

Electric lighting above and below ground.

Elevator for producing Nut and Duff.

Glace Bay Colliery—Situated 14 miles from the town of Sydney, and half a mile from Glace Bay Harbor, from which shipments are made. J. G. S. Hudson, *Superintendent;* William Adamson, *Underground Manager.*

Harbor seam, 6 ft.; dip averages 1 ft. in 12; vertical depth of shaft, 240 ft.

System of working—Pillar and bord. Coal from rise workings lowered to pit bottom by self-acting incline.

Ventilation—By Murphy Champion fan, 8 ft. dia., driven at a speed of 100 revolutions per minute, giving 50,000 ft. of air.

Naked lights.

Boilers—2 Babcock, each 210 h. p.

Hoisting engines (on surface)—1 double drum, 18 in. cylinder, 24 in. stroke; drums, 8 ft., built by Matheson, New Glasgow.

Pumps—2 in number, 1 steam (Cameron's "special"), and 1 double 10 in., having independent 9 in. col. (double).

Screens—Ordinary plain parallel, ¾ stationary.

Air compressor—One 20x20x24 in. stroke, and one 24x30 Rand.

Haulage—Endless rope throughout, driven by 18x36 in. engine, placed on surface.

———

International Colliery at Bridgeport, 12 miles from the town of Sydney; James Purves, *Superintendent;* J. McEachren, *Underground Manager.*

Harbor seam worked averages 5 ft. 10 in.; dip, 1 in 12; length of slope, 4,000 ft.; vertical depth shaft, 90 ft.

System of working—Pillar and room.

Ventilation—Murphy fan, 8 ft. dia.

Naked lights.

Winding engines (on surface)—Pair 16x36 in. and 14x30 in.; 8 ft. drum.

Pumps—1 Knowles, 160 ft. suction, 2,300 ft. discharge.

Boilers—1 Babcock, 210 h. p.; 2 plain cylindrical, 30x5 ft.

Haulage—One 18x36 for driving endless haulage, fixed on surface.

———

Gowrie Colliery, situated on the north side of Cow Bay. *Underground Manager*, Alex. McDonald; *Superintendent*, Peter Christiansen.

Seam worked (MacAuley) averages 5 ft.; dip, 1 in 8; Odiorne shaft, 200 ft.; new pit, 260 ft.; east slope, 2,800 ft.

System of working—Pillar and room (modified, the rooms being 10 yards wide and the pillars 7 yards), and one section long wall.

Ventilation—By furnace, 7 ft. 8 in. x 6 ft., giving 40,000 c. ft. air.

Naked lights.

Winding engines—Pair 20 in. x 3 ft. 6 in., direct acting by hoisting engines; 8 ft. drum; also pair 9x12 in. tail rope hauling engines, geared 6-1; two drums 3 ft. 6 in.

Pumps—1 Knowles pump, 20x36x10 in., capacity about 30,000 gals. per hour; 1 fly wheel pump, 10x12x5½ in., capacity about 6,000 gals. per hour; 1 V. Bob Lift pump, 16½x48x10½ in., capacity about 18,000 gals. per hour.

Boilers—3 Lancashire, each 150 h. p.

Screens—Common bar (3); angle 31°; size, 18 ft. x 5 ft. 9 in.

Air compressors—One 16½x20x24 in. stroke, and one Rand, 24x30.

Patent fuel plant—Yeadon's; capacity, 5 tons per hour.

Mitchell longwall machine.

Haulage—One 18 x 36 in. engine fixed below, geared for endless haulage.

Reserve Colliery, situated at Bridgeport Basin, two and one-half miles from Glace Bay; James McVey, *Superintendent;* Norman McKenzie, *Underground Manager.*

Phelan seam, averages 8 ft. 8 in.; dip, 1 in 13; worked by two slopes, of which the "Main" is 2,500 ft., and the "French" 3,580 ft. long; vertical depth, about 267 feet.

System of working—Pillar and room.

Ventilation by fan, about 70,000 cubic ft. of air per minute.

Naked lights.

Hoisting engines—One winding engine, 22 in. cyl., 3½ ft. stroke; geared 5 to 1, working endless haulage.

Pumps—One pumping engine, 15 in. cyl., 8 in. water cyl., 24 in. stroke; one Cameron pump, 14 in. steam cyl., 8 in. water cyl., 18 in. stroke.

Boilers—Two Babcock, each 210 h. p.

Screens—Three in use, 20 ft. long.

Ingersoll coal cutters.

Mitchell's patent tippler.

Slack pocket, elevator and conveyor.

Old Bridgeport Colliery, situate on the north side of Lingan Bay, ten miles from town of Sydney; Robert Robson, *Superintendent;* George Greenwell, *Underground Manager.*

Phalen seam, 8 ft. worked; dip averages 1 in 11; shaft 120 ft.; system of working, pillar and bord.

Naked lights.

Ventilation by furnace.

Two air compressors; one 20 x 20 x 24 in. stroke; one 24 x 24 x 30 in. stroke.

Hoisting engines—1 pair Crooks 14 x 24 double, 5 ft. drum.

Boilers—Three 40 h.p. water bottom, tubular loco. type.

Pumps—None. (Level to sea, natural drainage.)

Screens—Two ⅜ mesh, 20 x 6 ft.

Patent self-dumping cages and self-weighing tanks.

Ingersoll coal cutters.

Haulage—One Lidgerwood on surface, 10 x 12 in., geared 5 to 1; one Lidgerwood below, 10 x 12 in., geared 5 to 1.

One elevator to produce nut and duff.

Victoria Colliery, situate at Low Point, on the south side of Sydney Harbour; T. J. Brown, *Superintendent;* John Connors, *Underground Manager.*

Ross seam, 6 ft. 7 in. worked; dip averages 25°; length of slope, 1,740 ft.

System of working—Pillar and bord ; bords 18 ft. wide.

Ventilation—Murphy fan, 6 ft. dia., giving 40,000 cubic ft. per min.

Naked lights.

Hoisting engines—one horizontal engine, having two cylinders, each 24 in. dia., by 4 ft. stroke ; drum 7 ft. dia.

Pumps—One Blake pump, cyl. 18 in. dia. by 4 ft. stroke ; one Knowles cyl. 12 in. dia. by 1 ft. 3 in. stroke ; one Elliott pump 24 in. x 18 in. x 6 in. ; one Northey 24 in. x 18 x 7 in.

Boilers—Three cylindrical egg-end, 30 ft. long, and four multitubular.

Screens—Four, each 5 ft. wide by 20 ft. long.

There are also two locomotives and 120 waggons.

———

Dominion No 1. Colliery, situate about 10 miles from the town of Sydney. Opened in 1894. J. C. Mitchell, *Superintendent ;* A. Scott, *Underground Manager.*

Phalen seam, 8 ft. worked ; dip, 1 in 14 ; depth of shaft, 150 ft. (24 x 10 ft. 6 in.)

System of working—Pillar and bord ; pillars, 12 ft. ; rooms, 22 ft.

Ventilation—One 12 ft. Murphy fan, running direct and producing 120,000 cubic ft.

Boilers—Three Babcock, each 210 h.p., working at 100 lbs. pressure.

Winding engines—One pair 24 x 54 in. cyl. ; 8 ft. drum ; link motion, slide valve ; built by Smith & Co., Airdrie, Scotland. Man hoisting engine, 16 x 30, built by I. Matheson & Co., New Glasgow.

Air compressors—Two Ingersoll-Sergeant compound, each 48 x 30, with Corliss valves.

Pumps—One Cameron, 18 x 24 ft.

Coal heading machines—Two Stanley.

Coal cutting machines—Yoch and Ingersoll.

Other engines—Two 18 x 36 in., below ground, for driving endless haulage, built by Wilkes-Petsall Foundry, England.

One Mitchell longwall machine.

Steam water heater.

Steam reversing gear.

Slack pocket, elevator and conveyor.

Self-dumping cages, weighing tanks.

Steel lattice pit frame, 85 ft. high.

The whole of the coal is cut by machinery.

———

Roost Colliery—Working the Hub seam, which is 8 ft. thick, at a depth of 130 ft. *Manager*, J. G. S. Hudson ; *Under-Manager*, John Adamson. This mine has been closed upwards of 20 years, and was flooded. The water has all been pumped out and the mine re-opened and equipped with a modern plant, and is now equal to an output of 1,000 tons a day.

One pair Corliss valve hoisting engines, 24 x 42 in., with 8 ft. drum.

One pair direct acting engines, 16 x 32, for hoisting men.

Two Babcock boilers, each 210 h.p.

Steam water heater.

Bankhead and frame 85 ft. high.

Automatic loading screens and chutes; one Ingersoll compressor 20 x 20 x 24.

Self-dumping cages.

One pair engines, 12 x 20, geared 5 to 1, for endless haulage, fixed on surface.

One Cameron pump, 18 x 24 x 8, below, raises all the water to the surface.

Carpenters' and smiths' shops, engine boiler and compressor house erected, and commodious railway sidings, standard guage, connect this mine with the company's general Sydney and Louisburg system.

A large coal washing plant capable of handling 500 tons per day has been erected at a convenient place adjacent to the Sydney and Louisburg Railway, about three miles west of Morien Junction. The water supply is obtained by gravitation from Morrison lakes, and it is hoped that this important plant will be kept running to supply gas fuel for the Nova Scotia and Eastern States trade. The cost is about $45,000.

OUTPUT AND SHIPMENTS OF COLLIERIES.

COLLIERY.	1894.		1895.		1896.	
	Raised.	Shipped.	Raised.	Shipped.	Raised.	Shipped.
Gowrie.....	138,286	127,018	54,138	41,052	50,166	39,183
Reserve.....	223,079	209,343	199,553	192,887	269,802	243,458
Old Bridgeport.	54,842	54,656	107,202	99,329	140,539	133,922
Glace Bay.....	144,341	137,567	49,795	44,143	.....	.....
Victoria.....	130,962	120,647	96,931	83,051	62,810	52,310
Caledonia	125,124	118,872	163,423	145,227	231,515	212,985
International...	138,190	127,205	96,605	86,041	98,721	91,280
Dominion No. 1	33,346	33,776	73,167	63,109	161,528	151,796
Hub	Not	opened.	33,617	29,960	137,721	133,821
	988,170	929,084	874,431	784,799	1,152,802	1,058,755

COAL DISPOSALS, 1895-96.

	1895.	1896.
Nova Scotia (including land sales)...	148,938	183,079
Prince Edward Island.....	12,101	16,359
Newfoundland.....	38,907	42,598
Quebec.....	459,124	556,306
Carried forward	659,070	798,342

COAL DISPOSALS, 1895-96.—*Continued.*

	1895.	1896.
Brought forward	659,070	798,342
New Brunswick	25,739	41,940
St. Pierre	4,662	4,598
West Indies	266	.....
United States	56,534	162,489
Steamers	38,528	51,386
Colliery consumption	44,469	51,711
Company's railways	7,146	4,628
Colliery employees	18,738	18,237
	855,152	1,133,331
RECAPITULATION.		
Shipped	784,241	1,057,595
Land sales	558	1,160
Collieries and railway	51,615	56,339
Employees	18,738	18,237
	855,152	1,133,331

GENERAL MINING ASSOCIATION, Ltd.

Registered 1825. The capital was £274,690 in fully paid shares of £10, but in 1874 a return of £1 per share was made, in 1880 a further £1 per share was repaid, and in 1894 a return of £2 10s. was made. There is now, therefore, a capital of £151,079 10s. in shares of £5 10s. fully paid. Accounts to December 31st, submitted in April, but an interim meeting is held in November. A dividend of 2s 6d. per share was paid in 1877; for 1878, 4s; for 1879, 2s. 6d.; for 1880, 4s. 6d.; for 1881 and 1882, 8s.; for 1883 a dividend of 10s. per share was paid, with a bonus of 5s. per share out of the profits derived from the sale of shares in the Spring Hill Mining Company; in 1884 a dividend of 8s.; for 1885 and 1886, 5s. each year; 1887, 7s. 6d.; 1889 and 1890, 6s.; 1891, 8s.; 1892, 10s.; 1893, 15s.; 1894, 14s.; 1895, 12s. Reserve Fund, £31,400 sterling; carried forward 31st Dec., 1895, £1,018.

Directors:

J. D. Hill, *Chairman.*

Sir Charles Tupper, Bart. | W. S. Cunard.

Col. W. C. Western.

Head Office: E. E. Bigge, Secretary, Dashwood House, 9 New Broad Street, London, E. C., England.

Mines Office: R. H. Brown, General Manager, Sydney Mines, C. B.

CANADIAN AGENTS:

Messrs. Cunard & Company, Halifax, N. S.

In the year 1825 this company purchased the Duke of York's right to all the coal mines in Nova Scotia. In 1826 it sent out the late Mr. Richard Brown, father of the present manager, to survey and report upon the coal fields of Nova Scotia and Cape Breton. He found that the Sydney Mines, first opened in 1785 and under lease to Messrs. T. S. and W. R. Brown, was not included in the lease to the Duke of York, and as their lease expired on the 31st December, 1826, and they did not care to renew it at the heavy loyalty of 4s. 3d. per ton, which they had been paying, Mr. Brown took the lease from the Government for the General Mining Association. The opening out of works was commenced at the beginning of 1830, when the first shaft, 200 ft. deep, was sunk. Iron foundry and fitting up shops were then erected, and a railway from the pits to North Sydney for a shipping port was completed in 1834. Previous to this date the coal had been shipped at a small wharf outside the bars. In 1834 a second shaft further to the dip was sunk. In 1854 a third shaft 400 ft. in depth was put into operation. A still further move to the dip was made as the underground works advanced in that direction, and the fourth winning was got into operation in 1876. This last is known as the Princess Pit. In addition to their works at Sydney Mines, the G. M. Association opened a colliery at Bridgeport in 1830, which was closed in 1849; they also operated a small colliery at Bras d'Or from the year 1833 to 1849. They opened a colliery at Lingan in 1854, which worked until 1886, while they opened the Victoria Colliery (now owned by the Dominion Coal Co., Ltd.) in 1882.

Sydney Mines Colliery—Situated in the town of Sydney Mines, on the north side of Sydney Harbor, about three miles from the town of North Sydney. Edward Wilkinson, Underground Manager. Average persons employed: Below ground, 492; above ground, 243. The average output during the past three years has been 225,000 tons per annum. For the calendar year 1896 the quantity of coal mined was 278,500 tons.

Main seam, 5 ft. 4 in., worked dip averages 1 in 12.

Opened by shaft, 13 ft. dia. by 690 ft deep.

System of working—Bord and pillar, the bords being 17 ft wide.

Lamps—Mueseler and naked lights.

Ventilation by Guibal fan, 30 ft. dia., by 10 ft. wide, and by a Murphy fan, 10 ft. dia. by 4 ft. wide.

Hoisting engines having two horizontal cylinders, each 36 in. dia. by 5 ft stroke, drum 18 ft. dia., draws two tubs of coal in a cage at once, and can hoist 126 tons coal per hour.

Pumps—One Cornish pump, steam cylinder, vertical, 68 in dia. by 9 ft. stroke, pumps about 550 imperial gallons water per minute and works for 9 hours per day. Pumps are in two lifts, each 20 in. dia. by 336 ft. in height. One forcing set, steam cylinder, horizontal, 30 in dia. by 4 ft. stroke, pumps about 42 galls. per minute, in

one column of pumps, which are 8 in dia. by 360 ft. in height. The water from the faces of the workings at the dip is pumped to the shaft bottom by two duplex pumps ; one Northey, 4½ x 2¾ x 4 in., forces the water to a distance of 2,960 ft. back from the working faces and to a vertical height of 280 ft.; the other, a Northey, 7½ x 4½ x 10 in., forces the water thence to the pit bottom, a distance of 3,194 ft., and to a vertical height of 209 ft. 9 in. These two pumps are actuated by compressed air produced on the surface and carried to the pumps in malleable iron pipes.

Boilers—Eight egg-ended cylindrical boilers from 5 to 6 ft. dia. by 30 ft. to 35 ft. long ; three tubular boilers, each 18 ft. 9 in. long, by 5 ft. 6 in. dia. ; two steel tubular boiler, each 14 ft. long by 60 in. dia., with 62 tubes of 3½ in. dia. ; one steel tubular boiler, 14 ft. long by 54 in. in dia., having 54 tubes of 3½ in. dia., and one Lancashire boiler, 28 ft. long and 7 ft. dia.

Screens—Five, each 5 ft. wide by 24 ft. long.

Railroad is $4\frac{8}{10}$ miles in length to the shipping piers at North Sydney ; also connected with the main line of the Intercolonial Railway at North Sydney station. There are four locomotives and 220 coal cars of the capacity of from 4 to 6 tons each. They have two commodious shipping piers at their loading ground at North Sydney.

Coal Sales.

	Round.	Slack.
1890	143,365½ tons.	9,316 tons
1891	136,552 "	6,740 "
1892	151,884 "	7,631 "
1893	186,615 "	8,994 "
1894	211,000 "	12,000 "
1895	203,039 "	6,856 "
1896	219,979 "	6,486 "

In his report to the directors, under date of 14th January, 1896, Mr. R. H. Brown, manager of the colliery, states :—

" The great length of our north side underground engine plane, now upwards of a mile from the pit bottom to the landing, has been restricting the output therefrom, while only one trip of tubs could be run at a time. To obviate this, we have, during the year, completed another plane, contiguous to, and parallel with the first ; this allows the simultaneous running of two trips, the empty trip running down while the full trip is being drawn up ; by this means the capacity of the hauling engine and the output are both increased.

A small compressed air plant has been erected during the summer, for the purposes, firstly, of pumping out the water which had accumulated at the lowest places of the North side workings ; secondly, of pumping to the shaft bottom the large body of water remaining in the district, which had to be flooded to extinguish the fire therein, in 1885 ; and thirdly, of making a trial, on a small scale, of the cutting of coal by machinery at this colliery. The plant consists of an air compressor, having cylinders of 14 inches diameter, by 18 inches stroke ; a multitubular boiler, three air receivers, about 2,569 yards of wrought iron air-pipes, two small duplex pumps and two coal

cutting machines. The compressor also supplies the power to a small winch, which by drawing up the tubs of coal from the deep places to the engine plane, does the work of 3 or 4 horses. The advantages of a motive power which can be successfully applied as a substitute for horses, at a distance of a mile from the shaft bottom, and which, at the same time, adds to the coolness and ventilation of the colliery, can scarcely be over-estimated. The coal cutting machines have been in operation only for a short time yet, but they seem to promise satisfactory results.

A small quick-running engine, and two tubular boilers were procured and placed at Queen pit, for working the Murphy 10-foot diameter ventilating fan, which was set up there during the previous year.

The efficiency of our Guibal 30-foot diameter fan has been increased this season, by the addition thereto of the anti-vibration shutter, imported from England for the purpose. New blades have recently been put on this fan, in November last.

About 1,400 lineal feet of the pitch pine sliding spears in the main winding shaft, which were getting worn, have been replaced by new.

The pit head frame and pulley legs at the pumping shaft, when the workmen are lowered into and raised from the mine, were failing ; they have, this season, been replaced by new structures, made of pitch pine.

There being a scarcity of water for domestic purposes owing to the dryness of the seasion, in August we put down a bore hole in the vicinity of Queen pit, to a feeder of good water known to be there. The hole is 5 inches in diameter, and 155½ feet deep, and yields about 8 gallons of water minute. This, with the other borehole put down during the previous summer near our old pit yard, will, it is confidently hoped, provide an ample supply of pure water for the use of our workmen and others during the driest seasons.

In the month of May sixty coal cars of six tons capacity each were purchased from the Dominion Coal Company ; and, to enable us to keep our railroad open during the winter months, a snow plough has been provided.

Ten new cottages of improved design for our workmen have been constructed during the summer, and a good deal of work was done in repairing many of the workmen's houses, which are getting old.

The superstructure and trestle work of our eastern pier, at the loading ground at North Sydney, has been replaced by new of increased height, and provided with new drop and shutes for shipping coal. The approach to this pier over the public road has also been renewed, the side walls enlarged, and rolled steel girders, with pitch pine supports, have been substituted for the oak stringers hitherto used.

One breakage occurred during the season to our main pumps. One of the large pine spears broke in the lower set of pumps, which after a few day's work, we got successfully replaced by a new spear.

A number of sleepers on our railroad have been renewed ; the locomotives and rolling stock have been kept in repair, as also the several stationary engines. Considerable repairs had to be done to a number of our boilers, some of which have been in use for a number of years.

The Colliery plant, generally, may be said to be in very good working order."
The accounts for the year 1895, submitted 1st May, 1896, were :—

LIABILITIES.

	£ s. d.	£ s. d.
To shares capital, viz., 27,469 shares of £5 10s. 0d. each		151,079 10 0
" Sundry creditors—		
At the mines	3,162 18 5	
At Halifax	1,899 17 7	
In England	979 11 11	
Unclaimed dividends	329 6 0	
Do. return of capital	709 0 0	
		7,080 13 11
" Reserve—		
Per last account	29,850 0 0	
Added this year	1,550 0 0	
	31,400 0 0	
" Maintenance and renewal account—		
From 1894	40,250 0 0	
Sydney Mines, for current year	1,500 0 0	
	41,750 0 0	
		73,150 0 0
Low Point, Barrasois and Lingan Mining Company, balance subject to collection of book debts		2,032 2 5
" Profit and Loss—		
Balance from 1894	459 1 0	
Profit this year, per account "B"	17,040 15 7	
		17,499 16 7
		£250,842 2 11

(A) ASSETS.

	£ s. d.	£ s. d.
By property of the Association, viz :—		
Pits, Railways, Engines, Wharves, Buildings, machinery, etc	124,595 7 0	
Other property, including real estate, stores, mining implements, &c., valued per inventory	43,172 18 6	
		167,768 5 6
Carried forward		167,768 5 6

Brought forward			167,768 5 6
By Sundry Debtors—			
At Halifax	20,874 3 3		
At the Mines	2,722 2 7		
		23,596	5 10
" Bills Receivable—			
In England	8,000 0 0		
In Halifax	7,441 6 1		
		15,441	6 1
" Government and Indian securities	38,438 4 3		
Accrued interest thereon	432 13 1		
		38,870	17 4
" Cash—			
At Halifax	1,152 7 2		
At the Mines	402 18 10		
At London Bankers and Office	3,610 2 2		
		5,165	8 2
		$250,842	2 11

(B) PROFIT AND LOSS ENDING 31ST DECEMBER, 1895

DR.

	£ s. d.	£ s. d.
To coal stock on hand 1st January, 1895		267 16 3
" Sydney Colliery general working expenses, railroad expenses, shipping charges, royalty, &c.		63,999 15 8
" Maintenance and renewal of plant, railroad, wharves, &c		1,500 0 0
" Management expenses at Sydney Mines		1,697 9 10
" Income tax (average of three years)		568 12 0
" Expenses of management in London—		
Directors' salaries	900 0 0	
Secretary, Clerks and Auditors' salaries	720 0 0	
Office rent, printing, advertising, stationery, telegrams, postage, travelling and petty expenses	360 11 1	
		1,980 11 1
" Legal expenses	70 19 2	
" Balance—Profit carried to Account "A"	17,040 15 7	
		£87,125 19 7

Cr.

	£ s. d.	£ s. d.
By proceeds of sale of 223,645 tons of coal and miscellaneous receipts at Sydney Colliery		83,514 5 3
" Rents of cottages and lands		1,264 8 11
" Interest	1,889 11 7	
Less interest paid and exchange	385 3 4	
		1,504 8 3
" Transfer and other fees		5 7 6
" Profit on real estate sales		94 11 1
" Stock of coal 31st December, 1895		742 18 7
		£87,125 19 7

H. W. McNEILL CO., Ltd.

Incorporated 8th January, 1892. Authorized Capital, $50,000, in 500 shares of $100.

Directors:

H. W. McNeill, Anthracite, N. W. T.
E. L. Little, Anthracite, N. W. T. | Will. F. Little, Anthracite, N. W. T.

Head Office: H. W. McNeill, President, Anthracite.

W. A. McNeill, *Vice-President*, Oskaloosa, Iowa.
W. F. Little, Manager. | O. E. S. Whiteside, Ba. Sc., Mining Eng.

Formed to mine and extract coal in the Dominion of Canada. It operates mines under a ten years' lease, from June 1st, 1891, on the property of the Canadian Anthracite Coal Co., Ltd., on the line of the Canadian Pacific Railway, at Anthracite and Canmore, Province of Alberta.

Mining capacity at Anthracite, for house use exclusively, 150 tons per day. Mining capacity at Canmore, for locomotive use, 250 tons per day.

Business year ends June 1st. Production averages per annum, 65,000 tons. Mueseler safety lamps used. Fan ventilation. Pillar and room system. Three hundred men employed.

INTERCOLONIAL COAL MINING CO., Ltd.

Incorporated 1867 by Act of the Legislature of Nova Scotia.

Capital.	Authorized.	Issued.
Common stock	$500,000	$500,000
Preferred stock	250,000	219,700
First mortgage bonds	250,000	250,000

Directors:

Jas. P. Cleghorn, *President.*

Henry A. Budden.	G. Goff Penny.
Hartland S. Macdougall.	W. J. Nelson.
W. M. Ramsay.	Thomas Wilson.
A. W. Hooper.	R. McD. Paterson.

Head Office: Wm. J. Nelson, Secretary, 199 Commissioner St., Montreal.
H. A. Budden, Vice-President and Managing Director.

Mines Office: Chas. Fergie, M. E., Westville, N. S.

This company's property contains 2¾ square miles of coal areas, upon which is the Drummond Colliery at Westville, in the County of Pictou, Nova Scotia.

The main and second seams are worked, the third and fourth being intact. The second seam is only in process of being opened up, and the following notes refer to the main seam alone, which is worked by slopes, size 12x8 ft., having an average dip of 16 degrees, and are 5,000 ft. long; the fan shaft is situated to the south of these slopes at a vertical depth of 70 ft., and is 10x8 ft. The coal is good for steam and household purposes and makes excellent coke. The No. 1 slope is used exclusively for hoisting coal, the No. 2 for lowering and raising men, also for dropping down timber, materials, etc.

Mode of working—The seam is worked on the bord and pillar system; each lift is 450 feet; the levels are S. E. and N. W. 20 degrees; the dip is 24 degrees on the north and 19 degrees on the south side; counterbalance planes are driven every 450 to 500 feet; the bords are 10 ft. wide by 9 ft. high on the south, and 10 ft. wide by 7 ft. 6 in. high on the north side; heads are driven 100 ft. apart, 6x6 ft.; the pillars average 80x40 ft. The main levels of every lift are driven out to the extreme boundary before the work of opening out bye-bords is commenced. The coal is then worked back towards the slopes. No explosive is used, the coal being worked by maul and wedge.

Employees—The average number of persons employed is: Underground cutters, 176; loaders, 34; on cost, 90; boys, 50; total, 350. Surface, 118 men and boys. Total, underground and surface, 468. The average daily output is 1,000 tons in summer and 600 tons during winter months when working.

Lamps—To further increase the already many precautions taken with safety lamps, and principally to protect them in very high currents, a new small air compressor has been erected in the lamp room; to this compressor a ½-inch pipe is connected, arranged so that by opening a foot valve the glass and joints are subjected to a pressure of 30 lbs. per square inch. In case of any defect the lamp is immediately extinguished. The same compressor also supplies air for cleansing the gauzes of dust.

Ventilation—The ventilation of the mine is produced by a Walker "Indestructible" fan of the Guibal type. It is 18 ft dia. by 6 ft., driven by cotton ropes, and

geared 2 to 1. Engines for driving the fan are of the compound expansive cut-off type. High pressure cylinder, 17 in. dia.; low pressure cylinder, 23 in. dia. The engines are constructed to work independently of each other if necessary.

There is also an alternative fan of the Guibal type, built by G. W. Snider, Pottsville, Pa., and erected July 8, 1875. It is 20x7 ft. wide, driven direct by an engine 16x24 in. The engine and fan running at 45 revolutions per minute produce 100,000 cubic ft. of air per minute.

A steam jet is also provided in case of accident, and is capable of producing 25,000 cubic ft. per minute.

Winding—The winding and hauling engines are set back in direct line with the slopes. No 1 winding engine has two horizontal cylinders, 28x60 in. stroke; balanced piston valves; pair of plain drums 10 ft. diameter by 3 ft. 6 in. wide, with independent action. The Lane friction gear is used; hauls 12 boxes, each containing 1,344 lbs. of coal, up 4,300 ft. in three minutes.

No. 2 winding engines are a pair of 16x36 in. V friction, geared 2 to 1; drums 8 ft. diameter; work singly or connected. The rope used is ⅞ inch. of crucible steel.

Hauling ropes—These are of plough steel, 1⅛ in. diameter, "Lang's" patent.

Boxes—These are of wood, size 4 ft. 2 in.x 2 ft. 2 in. wide by 2 ft. 6 in. deep. The wheels are steel, 12 in. diameter, fast to the axle, which is 1⅝ in. diameter, and also steel; the bearings are inside; the gauge is 2 ft. 8½ in.; 400 boxes are used in and about the mine, and the greasing is done on the surface.

Boilers—There are 5 egg-end steel boilers, each 30 ft.x 3 ft. 6 in.; the working pressure of steam is 80 lbs.; 2 Cornish steel boilers, 30 ft. by 5 ft. 6 in., flues 1 ft. 10 in. diameter, working in conjunction with 1 "Heine" boiler of 200 h. p.; the working pressure of these is 100 lbs.; this latter boiler is a quick generator of steam, accessible at all points, costs little to erect and will burn the smallest slack or duff. Steam is conveyed down the mine by 5 in. cast iron pipes, having spigot and faucet joints, for the first 2,000 ft., afterwards by 3 in. wrought iron flanged pipes to a point of 3,700 ft., on the slope. The latest pipes provided for the lower workings are 3 in. wrought iron tubing flanged at ends, with loose cast iron spigot and faucet flanges. More mechanical labor saving appliances having been introduced, it was found necessary to erect in 1894 two more boilers; these are of the Stirling water tube safety type. Two of this class have been erected of 300 horse power.

Pumping—Three steam pumps are employed. No. 1 is "Knowles" direct-acting compound plunger pump, cylinder 8 in. and 14 in., plunger 6 in., stroke 24 in.; independent condenser; vertical lift, 347 ft.; column 10 in. cast iron. No. 3 is a "Northey" improved steam pump, cylinder 14 in., plunger 5 in., stroke 12 in., with separate condenser; vertical lift 500 ft.; column 4 in. cast iron. No. 4 is also a "Northey," 12 in. cylinder, 4 in. plunger, 12 in. stroke; vertical lift 80 ft.; column 3 in. wrought iron. No. 2 is a Northey compound condensing, duplex plunger pump erected at the 4,000 ft. level, with a capacity of 80,000 gallons, throwing a vertical distance of 600 ft.

Underground hauling—The haulage on the south levels, from which two-thirds or more of the output is taken, is by tail-rope; the engines, a pair of 12 in. by 14 in.

stroke, geared 3½ to 1; drums 4 ft. by 3 ft.; haul 24 boxes each trip; average speed of boxes 6 miles per hour; rope, crucible steel ⅝ in. diameter; boxes run on T rails 18 lbs. to the yard.

Coke Ovens.—There are twenty bee-hive ovens, each 12 ft. dia. by 6 ft. high; a charge consists of 5 tons of washed coal, and which has passed over a ½ inch square mesh screen; ovens are drawn every 60 to 70 hours; the average yield of coke is 3 tons per oven per charge. A Sheppard deadweight crusher reduces the coal to the required size. The coal is washed by a "Robinson" coal washer, capable of washing 100 tons in 10 hours.

Lighting—All workshops, engine houses and bankhead are lighted by the incandescent electric light. No open lights are allowed in any part of the mine, the lamps used are of the Marsaut type.

Screens—Two shaker screens receive all the coal produced. The screens are fed by revolving tipplers which deposit the coal gently on the screen, which is delivered on to a picking belt 60 ft. long by 4 ft. wide, to allow of the thorough picking and cleaning of the coal.

Workshops—These consisrs of a carpenters, blacksmiths', car, machine shops and sawmill. The machine shops contains lathes, drilling and screwing machines, also the dynamo for electric lighting. The sawmill contains travelling rotary saw and cross-cut, drilling and notching machine for cutting grooves in edge-rail sleepers. This machine will cut and groove 60 sleepers per hour. When formerly cut by hand they were turned out at the rate of 10 per hour per man.

Shipping Wharf—This is situated at Granton, on the Middle River, 7 miles north of the mines, with which it is connected by a line of railway owned and operated by the company. Steamers of 3,000 tonnage can load here. Two locomotives and some 160 hopper cars are employed during the shipping season.

A compound air compressor, 14 in. by 22 in., is being erected; the air is to displace the steam in the mine, which is giving trouble in consequence of the long distance it has to be carried.

Coal Disposals.

	1892.			1893.		
	Round.	Slack.	Total.	Round.	Slack.	Total.
Nova Scotia	39,367	37,744	77,111	53,613	47,038	100,651
New Bruaswick	5,388	2,701	8,089	2,912	653	3,565
Prince Edward Island	2,213	3,654	5,867	8,812	7,133	15,945
Quebec	83,439	9,073	92,512	79,794	6,101	85,895
Ontario	.....	.....	.....	23	10	33
Newfoundland	.....	.....	.....	880	.....	880
Coke ovens	38	2,312	2,350	143	987	1,130
Colliery employees	2,854	62	2,916	3,402	18	3,420
Colliery engines	3,540	5,263	8,803	8,111	2,755	10,866
Totals	136,839	60,809	197,648	157,690	64,695	222,385

COAL DISPOSALS—Continued.

—	1894.			1895.		
	Round.	Slack.	Total.	Round.	Slack.	Total.
Nova Scotia	57,043	43,465	100,508	52,219	39,865	92,084
New Brunswick	6,995	245	7,240	3,886	312	4,198
Prince Edward Island	8,480	6,859	15,339	10,270	6,046	16,316
Quebec	73,193	7,494	80,687	70,086	5,548	75,634
United States	2,050	1,009	3,059	.....	.....	.....
West Indies	1,052	.....	1,052	313	.....	313
South America	536	.....	536	.....	.....	.....
Colliery employees and local	4,503	370	4,873	4,140	75	4,215
Colliery engines	2,152	9,297	11,449	3,011	8,473	11,484
Totals	156,004	68,739	224,743	143,925	60,319	204,244

DISPOSALS IN 1896.

	Tons.
Nova Scotia	109,151
New Brunswick	1,903
Prince Edward Island	15,832
Quebec	39,801
Colliery employees and local	3,976
Colliery engines	9,747
Total disposals	180,410
Total coke made	2,708

NEW VANCOUVER COAL MINING AND LAND CO.

Organized 1862, and reconstructed 30th January, 1889. The authorized capital is £215,000 in 215,000 fully paid shares of £1 each. The capital was increased from £185,000 to its present amount in January, 1892, by the creation of 30,000 new shares which were issued credited as paid to Messrs. Rosenfeld, the agents, in settlement of a debt to that amount. Shareholders in the old company receive 10 new £1 shares in exchange for each old share of £10. There are 6 per cent. debentures amounting to £65,500. The bonds are registered, and are secured on the whole of the properties as a floating security, the interest being payable half yearly on the 31st March and 30th September. In April, 1889, previous to the transfer of the undertaking, the old company declared a bonus of £1 per share, but as the old shares were then only £9 paid, a final call of £1 per share was made, and the bonus applied in payment of the call.

Dividends :

June, 1889.....2½ per cent.	Dec., 1891.....2½ per cent.
Dec., 1889.....2½ "	June, 1892.....1½ "
June, 1890.....2 "	June, 1894.....3 "
Dec. 1890 .....3 "	Dec. 1894.....2 "
June, 1891.....3 "	May, 1895. ....2 "
	Dec. 1896.....1 "

At the 31st December, 1890, a credit to profit and loss of £7,699 12s. 1d. was carried forward after payment of a dividend. The accounts to the 31st December, 1891, showed a profit on the half year of £7,850 ; after payment of dividend a balance of £23,981 18s. 3d. was carried forward. For the half year ending the 30th June, 1892, a loss of £4,691 7s. 4d. was shown, reducing the credit balance to £19,290 10s. 11d. At the 31st December, 1892, a profit on the half year of £3,097 5s. 10d. was shown, making a credit to profit and loss of £22,387 16s. 9d., which was carried forward. Reserve fund, £20,000.

Directors :

John Galsworthy, *Chairman.*

Joseph Fry.	Frederick Tendron.
William Needham.	Edwin Andrew.

Head Office :

Joseph Ramsden, *Secretary*, 12 Old Jewry Chambers, Old Jewry, London, E.C.

CANADIAN OFFICE :

Samuel M. Robbins, Superintendent, North Corner of Farquhar Street and Esplanade, Nanaimo, B. C.

Agents at San Francisco : Messrs. John Rosenfeldt's Sons.

Formed to acquire the properties of the Vancouver Coal Mining and Land Company, Limited, registered in 1862. The company owns some 32,000 acres of freehold land, and operates the Nanaimo Collieries, Vancouver Island, in the Province of British Columbia.

Northfield Colliery—Four miles from Departure Bay, Nanaimo. Work at this mine has been suspended.

Wellington seam, averages from 3 to 5 ft. ; dip, 6 degs., or about 1 in 10 ; vertical depth of shaft, 440 ft. ; length of slope at foot of shaft, 700 yds.

System of working—Longwall.

Ventilation—By double fan, 8 ft. dia., 220 revolutions, giving 65,000 c. ft. of air per minute.

Lamps—Naked lights.

Boilers—Four Lancaster double flue, 4 ½ ft. x 25 ft., aggregate 200 h.p.

Winding engines—One high press. direct-acting, double horizontal at shaft, 16 in. dia., stroke 36 in., dia. of drum 6 ft.; at head of slope, one 8 in. cylinder, 12 in. stroke, drum 2 ft. 10 in.; at ventilation shaft, one 10 in. cyl., 12 in. stroke, 4 ft. drum.

Pumps—Four Cameron.

Screens—Two stationary ⅝ in. x ¾ in. mesh, length, 16 ft.

Other plant—An air compressor on surface supplying power for running small pumps below. Fire pump with necessary hose. Patent tipplers for delivering coal to screens, etc.

———

No. 1 Esplanade.—Situate half mile from wharves, Nanaimo harbour; 475 persons employed. Joseph Randle, *Underground Manager.*

Douglas seam, averages from 5 to 10 ft.; dip, 6 degs.; hoisting and ventilating shaft, 650 ft.

System of working—Pillar and stall.

Ventilation—Guibal fan, 36 ft. dia. 12 ft. wide, giving 119,000 ft. per minute.

Lamps—Naked lights.

Boilers—Six plain cylindrical, 5 x 30 ft., and four double flue Lancaster, 5 x 30 ft.

Winding engines—One high pressure, direct acting, double horizontal, at head of shaft, 30 in. cylinder, 60 in. stroke, drum 14 ft.; one (at head of slope) 16 in. cyl., 36 in. stroke, drum 5 ft.; one (at air shaft) 7 in. cyl., 10 in. stroke, drum 3 ft.

Pumps—One Cameron, 16 x 6 x 36, and one Blake 12 x 6 x 12, for pumping water from dip workings to shaft bottom; water hauled from shaft in tanks under cage.

Screens—Two fixed; length, 16 ft.; ½ in. x ⅝ in. mesh, with tipplers for placing coal on screen; 3 chutes with tipplers for supplying town coal.

Electric haulage—In hauling the coal from levels, which are in from foot of shaft a distance of two miles, the company utilises three 30 ton electric motors made by the Edison General Electric Company. There is also a large power house on surface, having two double flue boilers, 4½ x 25 ft.; one ball engine of 150 h.p.; one kilowatt dynamo, and all necessary equipment for lighting and generating power required.

Other plant—Air compressing plant for running underground pumps. Fire pumps with necessary hose to protect buildings on surface.

———

South Field Mine, No. 2.—Situate five miles south-east from the town of Nanaimo. Work at this mine is at present suspended.

Douglas seam worked; average from 6 to 12 ft.; dip. 8 deg.; length of slope from surface, 800 yards; small ventilating shaft, 70 ft.

System of working—Pillar and stall.

Ventilation—Guibal fan, 14 ft. dia. x 5 ft. wide, running 110 feet per minute, and circulating 109,000 cubic feet of air per minute.

Lamps—Naked lights.

Boilers—Two plain cylindrical egg end, 5 x 30 ft. each 40 h.p.

Winding engine—One direct acting, high pressure, horizontal winding engine, 16 in. cyl., 36 in. stroke, drum 5 ft.

Pumps—Two Cameron ; col., 5 in.; dis. 100 to 200 gals. per minute.

Screens—One stationery, ½ in mesh, 14 ft long.

Other plant—Air compressor on surface for supplying power for pumps ; small power hoists for hauling from dip places underground.

South Field Colliery, No. 5—Situated five miles from Nanaimo ; 200 persons employed. Richard Gibson, *Underground Manager.*

Douglas seam (South Field coal,) average from 6 ft. to 18 ft ; dip. 6 deg.; vertical depth of shaft 508 ft.

System of working—Pillar and stall

Ventilation—Double fan (Murphy) 8 ft. dia., circulating 50,000 ft. per min.

Lamps—Naked lights.

Boilers—Two double flue Lancaster, 4½ ft. dia., 25 ft. long, 100 h.p., and one tubular boiler.

Winding engines—Pair of 16 x 36 engines, drum 6 ft. dia., and one underground at head of slope, 7 in. cyl., 10 in. stroke, 2 ft. 10 in. drum.

Pumps—One Cameron, 3 in. col. discharging 40 galls. per min.

Screens—One stationary, ⅝ in mesh, 16 ft. long, with tippler for placing coal on screens.

Protection Island Shaft—(Nanaimo Harbor), situate 300 yds. from shipping wharf and half a mile from town of Nanaimo ; 200 persons employed ; Thos. Morgan, *Underground Manager.*

Seams worked—Douglas, upper and lower. Upper seam averages from 6 ft. to 10 ft. in thickness ; dip. 6°; vertical depth of shaft to seam, 670 ft.; lower seam averages from 3½ to 4½ ft.; dip 6°; vertical depth of shaft to seam, 740 ft. Upper seam, two slopes, main and diagonal ; main slope, 900 yds.; diagonal, 600 yds.

System of working—Pillar and stall, same as in No. 1 shaft, Esplanade, across the harbor, with which it is connected.

Ventilation—By fan, as at No. 1 Esplanade shaft.

Lamps—Naked lights.

Boilers—Six double flue Lancaster, 4½ ft. x 25 ft., 300 h.p.

Winding engines—Two, one for shaft and the other for operating slopes by endless ropes ; one pair 26 in. cyl., 42 in stroke, drum 10 ft. and 10 ft. 11 in., so as to adjust ropes in hauling from both seams.

Pumps—One Cameron, 30 x 36, 2 in. col. discharging 20 galls per minute.

Screens—Not yet in place, but it is intended to put in shaking screens and travelling belts.

Bunkers to hold 1,200 tons have been erected, and hydraulic lifts for elevating coal into bunkers.

Wharf accommodation for loading vessels of largest size, and appliances for lowering coal into ship hold so as to avoid breakage.

Harewood Estate—Several bores and trial shafts have been put down and a prospect tunnel has been driven in near the croppings where there is 5 ft. of good hard coal.

In addition to railway and plant at mines there are five locomotives, 237 coal cars (6 tons), besides lumber and ballast cars; bunker with a capacity of 2,000 tons; fitting shopes with turning lathes, boring, drilling, planing, screw cutting machines, hydraulic press, steam hammer, &c., &c.; diamond boring machinery (bores to 4,000 ft.); wharves, 2,000 ft. frontage, at which ships of the largest size can load at all stages of the tide. Estimated value of plant, $350,000.

Output.			Shipments.		
Year.	Tons.		Year.	Tons.	
	T.	C.		T.	C.
1890	389,505	12	1890	391,149	5
1891	527,457	15	1891	524,647	..
1892	433,386	7	1892	437,652	6
1893	469,311	15	1893	468,578	15
1894	393,772	17	1894	344,645	17
1895	339,704	.	1895	286,675	1
1896	320,575	13	1896	272,943	15

Labor employed above ground	230
" below "	751
Total	981

Balance Sheet for the Half Year ended 30th June, 1896.

Dr.

	£	s.	d.	£	s.	d.
To 215,000 shares of £1 each, fully paid				215,000	0	0
" Debenture capital				65,500	0	0
" Insurance fund account	1,500	0	0			
" Land sales reserve fund account	19,149	2	4			
" Reserve Fund Account	20,000	0	0			
				40,649	2	4
" Sundry creditors				46,162	15	7
" Profit and loss account				8,937	12	10
				£376,249	10	9

Cr.

	£	s.	d.	£	s.	d
By estates, buildings, colleries, railway plant, rolling stock and wharves	311,419	3	9			
Less estate fund account for half year	2,775	17	2			
				308,643	6	7
Cerried forward				308,643	6	7

Brought forward		308,643 6 7	
By Goods depot and reserve stores		5,604 7 7	
" Coal in bin and in transit		34,339 12 11	
" Sundry debtors for land	10,922 15 4		
" " coal and general,	13,298 7 1		
		24,221 2 5	
" Investment in £2,000 Metropolitan £3 10 0 stock		1,945 0 6	
" Nanaimo Gas Company's shares and Union Steamship Company Nanaimo debentures		500 0 0	
" Bills receivable, Nanaimo		227 1 8	
" Cash in London and Colony		768 19 1	
		£376,249 10 9	

PROFIT AND LOSS ACCOUNT FOR THE SIX MONTHS ENDED 30TH JUNE, 1896.

DR.

	£ s. d.	£ s. d.
To Amount carried to Insurance Fund account	100 0 0	
" " Land Sales Reserve Fund account	302 8 6	
" " Estate Fund account	2,775 17 2	
		3,178 5 8
" Director's fees	450 0 0	
" Auditor's fees	15 15 0	
" Office rent	35 0 0	
" Salaries	275 0 0	
" Printing, stationery, postages, telegrams, commission, and incidental expenses	194 9 11	
		970 4 11
" Debenture interest		1,989 0 0
" Income tax		332 9 0
" Balance, being profit carried down		2,712 13 0
		£ 9,182 12 7

	£ s. d.
To balance, as per balance sheet	8,937 12 10
	£ 8,937 12 10

Cr.

	£.	s.	d.
By Nanaimo profit, including £604 17 0 realized from land sales, after making provision for depreciation and maintenance.....	9,148	3	5
" Dividends on Metropolitan £3 10 0 stock.....	33	16	8
" Registration fees.....	0	12	6
	£ 9,182	12	7

	£	s.	d.
By balance brought forward from last account	6,224	19	10
" Profit brought down this half year	2,712	13	0
	£ 8,937	12	10

ROCHE-PERCEE COAL CO., Limited.

Incorporated 1896. Authorized Capital, $50,000, in shares of $100.

Directors:

H. E. Mitchell, | C. H. Cordingley, | T. H. Gilmour, Clifford R. Deacon, | Robert Rogers.

Head Office: Clifford R. Deacon, Winnipeg, Man.

Formed to carry on the business of colliery proprietors, coke manufacturers, iron masters, manufacturers of bricks, pipes and tiles, of miners and engineers in all their respective branches. Did some coal mining at Estevan in Southern Manitoba during 1896.

UNION COLLIERY CO. OF BRITISH COLUMBIA, Limited.

Incorporated 25th July, 1888. Authorized Capital, $1,000,000, divided into 10,000 shares of $100 each.

Directors :

Alex. Dunsmuir, | James Dunsmuir, *President*, | John Bryden.

Head Office: Francis D. Little, General Manager, Comox, B. C.

This company owns a property containing 3,000 acres of coal lands, and operates the Union colliery, near Comox, on Vancouver Island, British Columbia.

Union Colliery—Eleven miles from shipping wharf, connected by standard gauge railway. Rolling stock includes four locomotives (Baldwin), of 45, 30, 25 and 15 tons respectively; 150 25-ton coal cars, etc.

Two seams worked, averaging 3 ft. and 5 ft. respectively; dip, 1 ft. in 6 ft. (north); opened by two slopes, 2,200 yards and 700 yards respectively, and by one shaft 600 ft. deep, with levels 900 yards apart.

System of working—Longwall in upper seam; pillar and stall in lower.

Ventilation—No. 2 slope by Murphy fan, 8 ft. dia., 200 revolutions per minute; No. 4 slope by Guibal fan, 14 ft dia.; adit level by furnace. Ventilated on the separate split system, the intake being the slope; the air afterwards is split in four divisions, two for main slope, and the others for diagonal slope; after going around the working places it unites in one volume and goes along the air way and out at the upcast shaft.

Lamps—Naked lights.

Boilers—No. 1 slope, two 24 ft. x 48 in. each; return flues, 80 lbs. press.; at No. 4 slope there are six boilers same size and style as No. 1. There are also three upright tubular boilers 7 ft. x 42 in., for prospecting engines. No. 2 slope, 2 locomotive boilers; No. 5 shaft, 4 boilers same as No. 4.

Winding engines—Three in place at No. 1 slope, one direct acting, 16 in.; cyl. dble., 36 in. stroke, drums 6 ft.; No. 4 slope, tail-rope, 4 drums, geared, 16 in.; cyl. 24 in. stroke, drums 6 ft.; at No. 2 (prospecting) one geared, 12 in. cyl., 16 in. stroke, dia. of drum 4 ft.; No. 5 shaft, direct acting winding engine, two 30 in. cyl., 5 ft. stroke, 14 ft. drum.

Pumps—Ten in place; three Worthington; one fly wheel pump and six Gould electric pumps, with Jeffrey motor.

Screens—One inch main screen 12 ft. long. At date of report the company was completing a Sheppard washer having a capacity of 300 tons per day.

Washing plant—Sheppard, 300 tons; Luhrig, 600 tons per day.

Other plant—This includes a diamond drill; one steam pile driver; 2 saw mills, having a capacity of 10,000 ft. per day each; 100 coke ovens; and surface incandescent electric lighting plant.

OFFICIAL RETURNS OF OUTPUT.

	Output at 31st Dec.	Exported.	Home Consumpt'n.
	Tons.	Tons.	Tons.
1889	31,204	23,790	100
1890	69,537	74,048	1,481
1891	114,792	103,960	294
1892	68,928	66,556	....
1893	143,927	114,356	29,478
1894	241,372	233,660	7,222
1895	264,550	227,134	36,116
1896	233,610	165,885	66,648

WELLINGTON COLLIERY CO.

Owners :

Robert Dunsmuir & Sons, Wellington, B. C.

General Manager—John Bryden. | *General Overman*—Alexander Sharp,

Head Office : Wellington Colliery, Wellington, B.C.

This company owns and operates the Wellington Colliery, situate at Wellington, Vancouver Island, B.C.

Name of seam—Wellington. No. I, II, III, IV, V, VI.

Value of plant—$150,000.

Workings—Operated by five shafts with necessary slopes, airways and levels ; three air shafts.

Tramways, plant and rolling stock—Five miles of railway, with sidings and branches ; six locomotives ; 250 coal cars ; 13 stationery engines ; 9 steam pumps ; 4 wharves for loading vessels, etc.

OFFICIAL RETURNS OF OUTPUT.

	Output. Tons.	Shipment. Tons.	Home Sales. Tons.
1889	273,383	197,510	76,524
1890	174,496	106,281	68,769
1891	345,182	282,452	54,724
1892	200,370	238,400	.....
1893	337,334	295,212	41,121
1894	376,956	304,852	50,165
1895	336,906	294,878	51,084
1896	339,896	235,916	103,129

Output of fire clay, 1893, 642 tons, 1894, 145$\frac{5}{20}$ tons ; 1895, 664 tons ; 1896, 286 tons ; number of persons employed, 1894, 986.

WEST WELLINGTON COAL CO. LTD.

Incorporated 1896. Authorized capital, $500,000.

Directors :

Edward H. Heaps, | W. Goode Johnson, | David E Marshall.

Head Office : E. H Heaps, Vancouver, B.C.

Formed to purchase the coal property known as the West Wellington Coal Mine lately owned and operated by Mr. D. Jordan, and also to buy, sell or lease other coal lands in British Columbia ; prospect for coal with diamond drills or otherwise ; open up and operate coal mines, etc.

Name of seam, West Wellington ; 5 to 6 ft. worked ; opened by slope ; output in 1896, about 800 tons sold for home consumption ; persons employed, 15 ; equipped with plant of a value of $2,000.

IRON AND STEEL.

The iron ores of the Dominion have a wide range, both geographically and geologically. From Cape Breton in the east to Vancouver in the west they are found in abundant variety in almost every Province, and the sections of the country which have not coal have an abundance of timber suitable for the manufacture of charcoal. Hoffman* in his Annoted List classifies the occurrence of ores in Canada as follows :—

Bog Iron Ore—Occurs in great abundance at numerous localities in the Province of Quebec and Ontario. In the former the most important sites are in the Three Rivers district, or between the Rivers St. Maurice, Bastican and St. Anne.

Other deposits occur in the townships of Stanbridge, Farnham, Simpson, Ascot, Ireland, Eardley, Hull, Templeton ; the seigniories of Vaudreuil, Lotbinière, Lauzon, St. Vallier, and elsewhere. In Ontario it is met with in greater or less quantity in, the townships of Charlotteville, Middleton and Windham (Norfolk Co.), Camden (Kent Co.), Bastard (Leeds Co.), &c.

Magnetite—Is found, often beautifully crystallized, in veins of triassic trap of King's, Annapolis, Colchester, Cumberland and Cape Breton Counties, in the Province of Nova Scotia. Occurs massive, or disseminated in crystals in dolomite and chloritic slate, (sometimes contributing 56 per cent. of the mass) in the metamorphic strata of the Eastern Townships of Sutton, Ascot, Leeds and Orford ; in the Laurentian, in the Township of Hull, etc.; also in the form of black sand on the north shore of the Gulf of St. Lawrence, in the Province of Quebec. Forms deposits frequently of very great extent, among the Laurentian rocks in the counties of Frontenac, Hastings, Haliburton, Lanark, Leeds, Peterborough, Renfrew, etc., and is also met with in certain localities on lakes Superior and Huron, Province of Ontario. Further west, important deposits occur in crystalline rocks, supposed to be of carboniferous age in the vicinity of Gillies' Bay, south side of Texada Island, Province of British Columbia.

Hematite—Important deposits of red hematite are met with at several localities in Pictou and other counties in Nova Scotia. It occurs in association with specular iron ore, among the Huronian strata of the Quaco hills, and more abundantly in those of West beach and Black river, St. John County, Province of New Brunswick. Forms an extensive bed in the Township of McNab (Renfrew Co,), and is further found in the townships of Dalhousie and Beckwith (Lanark Co.), Palmerston (Frontenac Co.), Madoc (Hastings Co.), Leeds (Leeds Co.), etc.; at Gross Cap, north side of Michipicoten harbor, and other localities in the Lake Superior and Huron region, Province of Ontario.

*Geol. Survey Report, 1888-9.

Siderite—A bed of spathic iron, varying in thickness from 6 to 10 ft. occurs in sandstones of the millstone-grit formation, near Sutherland's river, Pictou County, Province of Nova Scotia. Occurs in thin veins in Huronian rocks in the Nerepis valley, and is also diffused to a considerable extent through rocks of a Devonian age in the northern part of Charlotte county in the Province of New Brunswick. Is found in quantity, in beds, on Flint, Daview's, and other islands of the Nastapoka group, eastern coast of Hudson bay; and is also met with in quantity in the township of McIntyre, Thunder bay, Lake Superior, Province of Ontario.

Specular Iron—Amongst other localities is met with in tabular crystals at Sandy Cove, Digby Neck (Digby Co.), Province of Nova Scotia; in tabular crystals, or thick plates, in the township of Leeds (Megantic Co.), also in thick plates in the township of Shefford (Shefford Co), in the Province of Quebec.

Limonite—Important deposits of this mineral are met with in Pictou and Colchester counties, Province of Nova Scotia. As there met with it occurs in the form of lustrous botryoidal or mammillary stalactitic masses, which exhibit a fibrous structure when broken; also compact and lustreless, and at other times earthy.

History of Iron Making.

1837. St. Maurice Forges, Que.

This, the oldest blast furnace in Canada, if not in America, dates as far back as 1737, when La Companie des Forges was empowered by Louis XV., to erect iron works on the Seigneurie of St. Maurice in the Three Rivers District, Province of Quebec, the King advancing 100,000 livres and exempting the enterprise from rents or dues. The construction was done under the direction of a French artizan, but lack of capital led to failure, and finally in 1743, the Crown took possession and proceeded to carry on the work in the name of the King and on his account. Skilled workmen were brought from France and Sweden to improve the furnace, rebuilding it in part at least (about 1752) and producing the blast furnace as it now stands with Walloon hearth in use until as late as the summer of 1883.

In 1767 the Crown leased the lands and works to Christopher Pellisier and others at a rental of £25 per annum. In 1775 the American invasion occurred when it appears that Pellisier helped the invaders with goods and money; he also cast shot and shell for them to be used in the siege of Quebec, and finally the night before the battle of Point du Lac, when the invaders were beaten by the English, he fled to the United States, taking with him all the funds, and also the vouchers for the money advanced to the Americans, about £2,000, got them cashed and sailed for France. This crippled the company, but by dint of hard work they managed to recover and continued operations till the expiration of their lease.

In 1783 Conrad Gugy secured the lease for sixteen years at £18 15s. stg. per annum. He sold the balance of his lease on the 10th March, 1787, to Alexander Davidson and John Lees for the sum of £2,300 currency. This partnership was subsequently dissolved, and on the 6th of June, 1793, Alexander Davidson sold the balance of his lease to George Davidson, David Munroe and Matthew Bell, for £1,500

currency. Their term expired in 1799, but on the 30th May in that year they were granted an extension to the 1st April, 1801, at the same rental. A new arrangement was now made by Munroe & Bell into a five years' lease, and paying an annual rental of £850 sterling. This lapsed in 1806, but they continued to hold it on suffrance till 1st January, 1810, when they secured a lease for 21 years at £500 per annum. From year to year the place had grown. In Bouchette's "Lower Canada," 1832, the following description is given: "The establishment is furnished with every convenience necessary to an extensive concern, the furnaces, the forges, the foundries, workshops, etc., with houses and other buildings, present the appearance of a tolerably sized village. The principal articles manufactured are stoves of all kinds used in the Province, large potash kettles, machines for mills and various kinds of cast and wrought iron, also a great quantity of pig and bar iron for exportation. The number of men employed is 250 to 300. The overseers and persons employed in the construction of models are English and Scotch. The workmen are generally Canadians."

The Hon. Matthew Bell, Seigneur of St. Maurice, held the lease until 1846, but dying insolvent, shortly afterwards it reverted to the Crown.

In 1846 the property was purchased at auction by Henry Stuart, Montreal, who leased it to James Ferrier, of Montreal, who worked it from 1847 to 1851. In 1861 the forges passed into the hands of M. Haroux, of St. Barnabé, who acquired the works together with a farm attached, for $7,000, and he in turn disposed of them to John McDougall, of Montreal, for £1,700 currency. This price included the furnaces, works, house, cottages, water privileges, etc. All the land pertaining to the forges was sold to the squatters and settlers who supplied ore and wood to the works. The product was chiefly used in the manufacture of car wheels.

Dr. Harrington in his Report 1873-5* gives the internal dimensions of the furnace:—

Height	30 feet.
Diameter of hearth	2½ "
Diameter of boshes	7 "
Diameter of throat	3½ "

The charge consisted of:—

Bog ore	600 lbs.
Limestone	45 "
Charcoal	16 bushels (French)†

The daily production averaged 4 tons, of which ten per cent. was white and 10 per cent. mottled iron. In addition to the cast iron from the blast furnace a small quantity of iron was also produced direct from the ore by the old fashioned hearth finery. This was employed in the manufacture of axes and was found to be of excellent quality, not at all cold short and showing only traces of phosphorous.

The furnace ultimately fell into the hands of Mr. Geo. McDougall, of Three Rivers, who operated it more or less continuously until 1883, when, owing to the ore and fuel becoming exhausted, it was finally closed.

* Geological Survey of Canada, 1873-4.

† The French bushel weighs two pounds more than the English.

1798. Batiscan, Que. The Batiscan iron works were erected about 1798, comprising a blast furnace, casting house, two forges, mills and other buildings, on the east side of the Batiscan river, about six miles from its mouth in the seigniory of the Batiscan, Champlain Co., Que, They were similar to those of St. Maurice, and were in operation for several years till the death of the proprietor, when they were closed.

1800. Gananoque, Ont. The first blast furnance in Ontario was built by a company at Lyndhurst, then called Furnace Falls, in Leeds county, at the falls of the Gananoque river. It was an old-fashioned stack, and in connection with it was a forge for the manufacture of bar iron. But the location was too far from ore deposits, having regard to the difficulties and cost of transportation at that early period in the history of the country, and as the ore used was of inferior quality and had to be drawn a considerable distance, the venture was abandoned after a trial of two years.

1815. Normandale, Ont. The next attempt was made in Western Ontario, at Normandale, township of Charlotteville, Norfolk county, in the year 1815, when Mr. John Mason, an Englishman, undertook to manufacture iron, and in two year's time he had a blast furnace in operation, which was of a rude and "primitive description, entirely the labor of his own hands, with the exception of the machinery for the blast. The bellows were formed out of two hollowed whitewood trees," In 1820 the property was purchased by Mr. Joseph Van Norman, and in 1821 he formed a partnership with Mr. Hiram Capron, late of Paris, and Mr. George Tilson, late of Tilsonburg, and built a blast furnace, which was completed and put in blast in 1822, after an expenditure of $8,000. The iron turned out from the bog ores of the district was of excellent quality. The furnace was in blast about eight or nine months of the year, running night and day, and producing 700 to 800 tons of iron, with an annual consumption of fuel equal to 4,000 cords of hardwood made into charcoal in the usual way. In 1830 the works were burnt down, but were rebuilt on an extended scale. Of the product of their works Bartlett* says: "In the early stage of the enterprise all the iron made was converted into various kinds of castings, their being no market for pig iron, and as a consequence the wants of the country at that time becoming overstocked, some were exported to Buffalo, and a vessel load of stoves and castings were sent to Chicago. The wares produced were disposed of along the shores of Lake Erie, from Fort Erie to Amhurst Bay, and taken into the interior of the county by teams. Before the opening of the Welland canal, stoves, kettles and other iron ware were sent very long distances by teams, particularly in winter, going as far as Chatham, Waterloo and beyond St. Catherines. After the opening of the Welland canal (the first vessels passed through in the year 1829) places on the canal and Lake Ontario were accessible by water, and accordingly two vessels were employed and kept busy during the summer. Hamilton,

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*The Manufacture, Consumption and Production of Iron, Steel and Coal in Canada.

Toronto, Port Hope, Kingston, etc., were thus supplied, and from these centres the wares were distributed into the back conntry, some of them were sent as far as Montreal. The business seemed to be the right tbing for the country, and started at the right time to be of use to the new settler, to furnish him his sugar kettles, his kettles for boiling the ashes gathered from the burning of his log heaps, as at that time the potash made from these ashes was the only exportable article which could be shipped to foreign countries and for which money could be obtained."

About the year 1847, ore and fuel being pretty well exhausted, the furnace was abandoned.

1820. Marmora, Ont.

In 1820 Charles Hayes commenced the manufacture of iron at Marmora, Hastings County, and a furnace which was erected to smelt hard, magnetic ores, had the ill fortune to ruin or cripple three or four successive owners in the course of forty years, although for the greater part of that time it was out of blast.

1825. Moose River, N. S.

The first iron making in Nova Scotia appears to have been at Moose River in Annapolis County. In 1825 an association was formed for the manufacture of iron, called the Annapolis Mining Company, with an authorized capital of £10,000, the Government offering two bounties of £600 each for the manufacture of hollow-ware and bar iron. The works were erected on the eastern bank of the Moose River, ore being supplied from deposits in the locality and from Nictaux. Haliburton in his History of Nova Scotia says :—"They have already (1828) manufactured a quantity of hollow-ware and are now engaged in laying the foundations of forges for making bar iron. To carry these objects into effect, they have increased their capital to more than twice its original amount. The quality of the ore has now been ascertained, and the only part of the experiment yet to be decided is, whether they can compete with English ware, or whether the cost of production will not exceed the value of the article when manufactured, a result which must depend very much upon the economy and skill with which the establishment is managed." The works were only a short time in operation when, according to the Mines Report 1877, they were suddenly suspended owing to political causes, but not before excellent iron had been produced, both pig iron for foundry purposes and refined bar iron. Bartlett says :—"For thirty-three years the works were closed, and when operations were resumed it was for a short time only, to be again neglected for ten years more. In 1872 one hundred and sixty tons of pig iron were made and shipped to Boston."

1828 Albion Mines, N. S.

In 1828 when the General Mining Association obtained the mineral concessions granted the Duke of York, the coal pits at the Albion mines, now called Stellarton, in Pictou County, Nova Scotia, were opened on a greatly extended scale and the sum of £1,000 was put aside for the purpose of experimenting in iron making.

Mr. H. S, Poole* describes the work as follows:—"A furnace was erected on the north side of the foundry in front of the archway, now bricked up, that led into the casting house. It was probably about forty feet high and eight feet in diameter at the boshes. It was lined with special brick a foot thick, made key shape to suit the circle and backed with a course of stretchers, between which and the casing there was a space of four inches filled with sand. The casing was eighteen to twenty inches thick, built with a batter and hooped. The hearth was built of special brick set on end. This furnace was not pulled down until 1855. An inclined way laid with iron rails led to the top of the furnace for charging purposes. The season of 1829 was spent in experimenting with the several ores of the district. A small quantity of limonite was obtained from the Fraser Saddler property at Bridgeville, but the bulk of the ore tried was red hematite brought down McLellan's brook from the locality now known as Iron Mines Post Office, where it is naturally exposed and was easily got by open quarrying. The clay iron-stone nodules which occur in the coal were also carted down from the pits to the foundry and roasted in open heaps. The blast for the furnace was got from the foundry engine erected in 1828, and which continued in use until 1871, when new machine shops were put up. The engine was condensing and the pressure of steam carried was about five pounds, regulated by a tank of water placed at the necessary height. When in the course of time leaks in the boiler occurred, temporary repairs were effected by a layer of horse manure covered by a plate of iron. Besides the plant referred to preparations were made for operating on an extended scale and a blowing engine was imported.

It is said that in all some 50 tons of metal were made, but of a quality that was useless for foundry purposes. It was hard white iron, pieces of which still lie about the yard. Of what was made, part was used as ballast for the slip at Shipyard Point on the East river. Weights about the colliery were made of it. The 'baby' on the rope used in the Foord pumping pit is still on hand, and current reports confirm Professor How's statement that stamps of a quartz mill at Waverley made of it had been pronounced to be ten times more durable than Belgian iron.

1831 Clementsport, N. S.

At Clementsport, in Annapolis county, a charcoal furnace was erected as early as 1831 to smelt the magnetite ore of the vicinity, and continued in blast somewhat irregularly for over thirty years. "The furnace," says Harrington,† "is built of stone, and is 35 ft. high, 4 ft. in diameter at the hearth, 9½ ft. at the boshes, and 7 ft. at the throat. There are three tuyeres, and the blast, which is hot, and has an average pressure of from 1¾ to 2 lbs. to the square inch is produced by water power at the wheel—a breast wheel—being 30 ft. in diameter. The blowing cylinders, three in number, are of cast iron, 4 ft. in diameter and 5 ft. stroke of piston. The blast is heated by burning the waste gases from the furnace in a hot blast oven containing 17 siphon pipes through which the air is made to pass. The oven is on a level with the

*Proceedings Mining Society of Nova Scotia.

†Report Geological Survey of Canada, 1873-74.

top of the furnace and is built with brick and bound with iron. The charge consists of from 750 to 800 lbs. of ore, 120 lbs. of limestone or sometimes less, and 16 bushels of charcoal."

1831. Essex County, Ont.

A furnace to smelt bog ore was erected in 1831 by Messrs. Cahoon & Field, at what is now known as the hamlet of Olinda, in the township of Gosfield, Ont. The height of the stack was about 30 ft. and the furnace is said to have been driven by a cold blast through one tuyere, but its daily capacity is not known. Sufficient quantities of ore were obtained within a radius of five miles, being chiefly of a variety known as shot ore, and it was smelted with a mixture of hardwood and charcoal. Stoves, plows, potash kettles, etc., for the needs of settlers were made at a foundry in connection with the furnace, but the principal market for the pig iron was found in the United States. After having been in operation six years it was blown out in 1838, tradition says "for want of funds."

1837. Madock, Ont.

A furnace for smelting iron ore with charcoal fuel was built at Madoc, in Hastings county, Ont., in 1837, but was in blast only a short time when it was abandoned, one of the proprietors having been killed in the mine and the other not having sufficient means to carry on operations. The ore smelted was from the Seymour ore bed in the 11th lot of the 5th range, Madoc, and is said to have produced iron of a very seperior quality.

1848. Woodstock, N. B.

About 1848 "The York and Carleton Mining Company" obtained a subsidy from the Provincial Government of 10,000 acres of picked lands and expended altogether about $30,000 in erecting a blast furnace, two blowing engines, a helve hammer, operated by a small engine, boilers, buildings, etc. The ores were hematites from Jacksontown. The furnace was in blast at intervals until 1862, when it passed into the hands of W. E. Smith, of Sheffield, England. In 1863 it was again blown in and kept in blast at intervals for several years. The whole time during which the furnace was actually in blast was only about eight years. Mr. Smith also erected a small cupola furnace in 1866, which, however, was only used for about a year. The blast furnace is (according to measurements published by Prof. Bailey in 1864) 39 ft. high and 9¾ ft. in diameter at the boshes. According to Prof. Hind, 3.33 tons of ore and 126 bushels of charcoal were required to make a ton of pig iron.

1849. Acadia Iron Works, N. S.

The Acadia Iron Works at Londonderry, N. S., were commenced in 1849 and the first iron was made by a Catalan forge in 1850. In 1852-53 a charcoal blast furnace was erected for the manufacture of pig iron, the Catalan forge being abandoned. Mr. E. A. Jones, then manager of the works, writing to Dr. How, says:* "Up to the

*Mineralogy of Nova Scotia, 1868.

time of my arriving in the Province, in the summer of 1857, there had been made altogether about 1,000 tons of iron from about 4,000 tons of ore. Since that time to the present (1861) we have made about 4,000 tons of iron, using about 9,000 tons of ore. Our present make of bar iron is at the rate of 1,200 tons, of an economic value of about £24,000 per annum. The ores we use are a hematite yielding about 48, and a brown and red oxide yielding about 40 per cent. of iron. It requires about 160 bushels imperial of charcoal and 200 bushels of limestone (this is found in the vicinity) used as a flux, to smelt one ton of pig iron, and about 3½ cords of wood to convert the pig iron into bars." In 1865 Dr. How stated there were 250 men and boys and 25 horses employed on a daily average. The following statement shows the make of pig and bar iron for several years: —

Year.	Pig iron made.	Bar iron made.
1862	1,150 Tons.	945 Tons.
1863	1,251 "	911 "
1864	1,663 "	1,198 "
1865	1,784 "	1,633 "
1866	2,124 "	1,093 "
1867	2,068 "	421 "

The furnace continued in blast until 1874, and is estimated to have produced about 45,000 tons of pig iron.

In October; 1873, the furnace was acquired by the Steel Company of Canada, particulars of which are given later on.

1856. Nictaux, N.S. Two blast furnaces were built at Nictaux, (one in 1856) Annapolis County, N. S,, but they did not remain long in blast, and the iron produced is said to have been of poor quality on account of the phosphorus in the ores. In 1874 the furnaces were "in ruins," having been partly torn down by the people in the neighborhood to obtain bricks.

1860. Bloomfield, N. S. About 1860 a blast furnace was put in operation at Bloomfield, to smelt bog ores of that district, and it has been in blast several times since then.

1860 Radnor Forges, Que. About the year 1860 Messrs. Larue & Co. established not only a blast furnace, but forges, rolling mills, and car wheel foundry (the latter located at three Rivers.) In addition to this they had 40,000 acres of freehold lands. From 200 to 400 men were employed, and the works were carried on for some time with a product of four tons of pig iron per day. A pair of car wheels together with an axle manufactured at these works were sent by Messrs. Larue & Co. to the International Exhibition of 1862, and attracted much attention, as the wheels had actually run 150,000 miles. Still, better results have been obtained in later years from the same iron. The wrought iron pro-

duced at the establishment was used largely for the manufacture of scythes and nail rod iron, and was much prized by consumers, who considered it equal if not superior to the very best Swedish iron. In the establishment of the works over one million dollars was sunk, and the greater part of it was lost through disastrous fires, and, it is said, "bad management." There is no doubt, however, that the lack of railway facilities, which prevented supplies being taken from a greater radius than seven miles, handicapped the proprietors in their attempts to find a market for their product, and had as much to do with the failure as anything else. This disadvantage is now entirely overcome.

1867
Moisie River, Que.

On the beach of the Moisie river there are great deposits of iron sand interstratified with beds of nearly pure silica. Bloomary furnaces were erected in 1867, which continued in operation for several years, being finally dismantled in 1876 or 1877.

1867
Hull, Que.

In 1867 the "Canadian Iron Mining and Manufacturing Co., of Montreal, built a charcoal furnace at Hull, near Ottawa, and for a time in that and the following year produced a superior quality of pig iron, but the "economic results not being satisfactory" the working was stopped and the furnace being much injured by a forest fire, a few years afterwards, was abandoned. The dimensions given by Dr. Sterry Hunt* were:—Height, 38 feet; boshes, 10 ft. 6 in., and throat 4 ft. 5 in.

1869
St. Francis, Que.

The St. Francis furnace, near Riviere aux Vaches, in Yamaska county, Que., was completed in 1869. The dimensions were:—Height, 30 ft.; boshes, 7 ft. 2 in.; hearth, 6 ft. x 2 ft. 2 in.; depth of hearth, 1 ft. 8 in. The furnace was in operation until 1873, making at that time 5,520 tons of charcoal pig. It was then sold to Messrs. John McDougall & Co., of Montreal, who worked it till 1880, when it was closed owing to the exhaustion of the ores in the vicinity.

1871
Quebec.

In 1871, the Steel Company of Quebec was formed for the purpose of manufacturing steel directly from the magnetic sand of the north shore of the St. Lawrence by a process invented by the late Mr. Labreche Viger. The furnace, a well Siemens regenerative furnace, with five gas producers, charcoal kilns, etc., was built at the "Point au Livre" in Quebec city. In the winter of 1871-72 Mr. Labreche Viger died, being succeded in the management by Dr. Larue. The company made several experiments until 1873, and then, having spent about $50,000, went into liquidation.

Bartlett says: "In making steel, the sand which had been purified by Dr. Larue's magnetic machine was mixed with tar and charcoal powder in box a con-

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*Report Progress Geological Survey, 1866-69.

taining revolving knives or beaters, and the mixture was then pressed in square blocks by means of an hydraulic press. The blocks were then piled upon the furnace hearth and melted down to steel which was finally tapped off into ingots containing about 200 lbs. The cause of failure I am not told, but the difficulty was probably experienced in obtaining a regular and homogeneous product."

1872. Hull, Que. In the winter of 1872-73 the Haycock iron mine, located about eight miles north-east of the city of Ottawa, in the Province of Quebec, was opened and about 5,000 tons of ore raised. The works consisted of a steam saw mill, bloomary forge, engines, pump, steam hammer. Blooms were made and exported to England; the iron was of a very fine quality, but the enterprise was not commercially successful and the works were closed.

1873. Baie St. Paul, Que. In 1873 "The Canadian Titanic Iron Co." erected two charcoal furnaces at St. Urbain, Charlevoix county, to work an immense bed of titanic iron, having a thickness of 90 ft. In spite, however, of the great quantity of ore at this point, it has never been found possible to carry on smelting operations with any measure of success and the furnaces were only in blast for a very short time, being dismantled in 1880.

1873 Londonderry, N. S. In October, 1873, The Steel Company of Canada, Ltd., purchased the Acadia Iron Mines, the consideration being £82,000 in cash and £120,000 in fully paid founders' shares. £8,000 was also paid to Dr. Siemens for the "right to use free of royalty his patented processes for the production of iron and steel and their subsequent working into merchantable form." Bartlett, in his paper before the American Institute of Mining Engineers, says: "The accidental location of the little charcoal blast furnace seems to have given rise to the choice of the situation for the new works. It would be very difficult to account for the selection in any other way. Works specially designed for making steel by the new process, with rotators, regenerative melting furnaces with gas producers, two blast furnaces, branch lines connecting with the Intercolonial Ry., etc., were built. The scale upon which the expenditures were made can be best understood by reference to the item of cost for the manager's house which came to $40,000.

The works were completed and got into operation, probably at a further expenditure of $1,250,000. The new process did not succeed. Tons of expensive machinery had to be broken up and the melting furnaces and gas producers were pulled down. A second-hand rolling mill was purchased, puddling furnaces were built, an axle forge with a foundry for car wheels and general castings were added and the products of the works changed from steel to pig iron, bar iron and castings. The place was not now self-contained as before; charcoal was no longer the fuel used, so the trees were of little use except for timbers in the iron mines. What was wanted

was coal and coke. The Pictou coal fields lay 51 miles to the eastward, that of Cumberland 34 miles to the westward. Limestone was obtained from Brookfield, 25 or 50 miles to the eastward. When after having paid freight on all these materials, there was no outlet for the iron but by the Intercolonial Railway, the distance by rail being 773 miles.

This condition of affairs was bad enough, but the situation was made much worse by the fact that the company had never built any coke ovens of its own, and that at this time only one colliery mined a coal suitable for coking, and also owned the only coke ovens in the county.

An explosion closed the colliery and for a time coke was not to be had at any price. The blast furnace had to be shut down, and the loss for this cause alone can be better imagined than described. After this experience some coke ovens were built. Finally a colliery was purchased and fully equipped ; but upon practical trials the coal was found to be to a considerable extent unfitted for the company's uses."

It is not surprising that after all the vicissitudes, and in view also of the fact that until 1880 imported pig iron was admitted free of duty into the Dominion, the company failed.

1880
Drummondville, Que.

In 1880 and 1881 Messrs. John McDougall & Co., of Montreal, built two charcoal furnaces at Drummondville, on the River St. Francis, in the Township of Grantham, Drummond county, Que. These are still in operation. The furnaces are each 34 ft. high, with boshes of 8 and 10 ft. respectively, worked with hot and cold blast, and the air pumps are driven with water power from the river St. Francis. The fuel used is charcoal and the bog ore which contains about 40 to 45 per cent. of iron is obtained in the vicinity of the works. The annual capacity is 4,000 tons, and the product charcoal pig iron for car wheel purposes.

1881
Hochelaga, Que.

The Canadian Iron and Steel Co., of Montreal, at Hochelaga, attempted to manufacture iron directly from the ore, with an invention of Dr. George Duryees, of New York, and by using petroleum as fuel. The experiments were continued about twelve months, and iron ores from Hull, Baie St. Paul, Moisie sand and bog ores were tried with limestone, clay and quartz as flux, but although a small quantity of iron was produced, the experiments, after an expenditure of $70,000 or $80,000, were stopped.

1883
New Glasgow, N.S.

Nova Scotia Steel and Forge Co., Ltd., completed their works at New Glasgow, N.S., the first cast being made on the 25th July, 1883. (See notice of the Nova Scotia Steel Co., Ltd.)

1887
Londonderry, N.S.

Londonderry Iron Co., Ltd., incorporated in 1887 to take over the mines, furnaces, works and other property of the Steel Company of Canada, Ltd. (See notice elsewhere.)

1888 Ferrona, N.S The New Glasgow Iron, Coal and Railway Co., Ltd., incorporated in 1888. Works constructed at Ferrona, Pictou County, N.S., and blown in 1892. Since amalgamated with the Nova Scotia Steel and Forge Co., Ltd. (See notice of operations elsewhere.)

1889 Radnor Forges, Que. Canada Iron Furnace, organized 29th November, 1889, to take over the furnaces and other property at Radnor Forges, Que. (See notice of operations elsewhere.)

1891 Bridgeville, N S. Pictou Charcoal Iron Co., Ltd., constructed a charcoal furnace plant at Bridgeville, Pictou County, Nova Scotia. (See notice elsewhere.)

1893 Hamilton, Ont. Hamilton Blast Furnace Co., Ltd., incorporated to smelt ores at Hamilton, Ont. Furnace of a capacity of 200 tons constructed and blown in January, 1896. (See notice elsewhere.)

Bounty on Pig Iron, Steel Billets and Puddled Bars.

For the purpose of stimulating the iron industries, the Dominion Government in 1883, authorized the payment of a bounty of $1.50 per ton on all pig iron manufactured in Canada. This bounty was continued until 1st July, 1889, when the rate was made $1.00 per ton. A further change was made on 1st July, 1892, when the rate was increased to $2.00 per ton. By amendments to the tariff made in April, 1897, the bounty was increased as follows:

On steel ingots, manufactured from ingredients of which not less than fifty per cent. of the weight thereof consists of pig iron made in Canada, a bounty of $3 per ton.

On puddled iron bars manufactured from pig iron made in Canada, $3 per ton

On pig iron manufactured from ore, a bounty of $3 per ton on the proportion produced from Canadian ore, and $2 per ton on the proportion produced from foreign ore.

That it is expedient to provide that the Governor-in-Council may make regulations in relations to the bounties hereinbefore mentioned, in order to carry out the intention of these resolutions.

That it is expedient to provide that the said bounties shall only be applicable to steel ingots, puddled iron bars and pig iron made in Canada prior to the 23rd day of April, 1902.

That it is expedient to provide that the foregoing bounties shall be payable only on iron and steel for consumption in Canada, and that the Governor-in-Council may at any time, by proclamation, impose export duties on such iron and steel, if the same shall be exported from Canada, such duties to be not greater than the amount of the bounty payable on such iron and steel.

The following are the amounts paid to the companies under this authorization:

1884	$44,090
1885	38,655
1886	39,270

BOUNTY PAID ON PIG IRON, 1887-1891

—	1887.	1888.	1889.	1890.	1891.
Steel Co. of Canada	$31,164 01	$18,642 62	.....	.....	.....
Steel Co. of Canada, withheld pending settlement with I. C. Ry.	22,033 09	.....	.....	.....	.....
George Macdougall	1,139 87	1,214 01	$ 1,109 03	$ 523 49	$ 1,376 66
Londonderry Iron Co.	.....	7,701 53	30,626 35	21,585 64	15,849 81
John Macdougall & Co.	5,239 19	5,756 25	5,498 24	3,588 14	2,926 58
	$59,576 16	$33,314 41	$37,233 62	$25,697 27	$20,153 05

BOUNTY PAID ON PIG IRON, 1892-6.

—	1892.	1893.	1894.	1895.	1896.
Londonderry Iron Co.	$26,066 24	$49,906 13	$ 49,043 10	$13,045 98	$36,525 13
Can. Iron Furnace Co.	2,150 71	12,973 39	15,077 51	12,581 60	11,215 24
Nova Scotia Steel Co.	.....	.....	.....	.....	42,298 50
New Glasgow Iron, Coal and Ry. Co.	.....	25,871 28	55,269 00	33,695 00	.....
Pictou Charc'l Iron Co	.....	1,420 00	.....	3,440 00	.....
Hamilton Blast Furnace Co.	.....	.....	.....	.....	7,090 00
Macdougall & Co.	2,077 42	3,725 68	5,654 88	621 37	3,356 17
	$30,294 37	$93,896 48	$ 125,044 49	$63,383 95	$70,485 04

BOUNTIES PAID ON STEEL BILLETS AND PUDDLED BARS.

By Order-in-Council under date of 22nd June, 1895, the Dominion government granted a bounty of $2.00 a ton on all steel billets manufactured in Canada from Canadian ore. As stated on page 69 this bounty was increased in April, 1897, to $3.00 per ton.

In accordance with the above there was paid the Nova Scotia Steel Co., Ltd., a bounty of $56,925.26 on 28,462$\frac{1}{2}\frac{2}{2}\frac{5}{4}\frac{8}{0}$ tons of steel billets manufactured at New Glasgow, N.S., between 1st March, 1895, and 1st March, 1896; and to 31st March, 1897, $17,151.10.

By Order-in-Council under date of 24th February, 1896, the Dominion government granted a bounty of $2.00 per ton on all puddled bars made in Canada from Canadian ore. In April, 1897 (see page 69), this bounty was increased to $3.00 per ton.

In accordance with the above there has been paid to date: Londonderry Iron Co., $8,352.32; Pictou Charcoal Iron Co., $172; Ontario Rolling Mills Co., $183.23.

Ontario Iron Mining Fund.

In 1894 the Ontario Legislature, having in view the encouragement of iron mining and smelting in that Province, enacted as follows:

"That a sum not exceeding $125,000 shall be and is hereby appropriated and set apart from and out of the surplus moneys forming a part of the Consolidated Revenue Fund of this Province, for the purpose of encouraging miners to open up and work the iron ore deposits of the Province; and such sum of $125,000 shall be designated and known as the Iron Mining Fund.

"The Treasurer of the Province may, with the authority of and under such regulations as may be made from time to time by the Lieutenant-Governor in Council, pay out of the said fund to the miners or producers of ore upon all iron ores which shall be raised or mined or smelted in the Province for a period of five years from the 1st day of July, 1894, the equivalent of one dollar per ton of the pig metal product of such ores; but no sum or part of said moneys shall be so paid until the said regulations governing payments shall be approved by the Legislative Assembly.

"Should a larger quantity of ore be raised or mined or smelted in any one year than the sum of $25,000 will be sufficient to meet the payments at the rate and as provided in the foregoing sections, then payments to the miners or producers thereof shall be made on a *pro rata* basis, so that no more than $25,000 shall be paid for the produce of ores in any one year.

"It is declared and provided that payments out of the foregoing appropriation of $125,000 shall cease and determine with the payments of any sum or sums which shall shall have been earned during the said period of five years, and any part or balance of said sum remaining thereafter shall be returned to and become part of the Consolidated Revenue Fund of the Province."

An Act to Encourage the Manufacture of Railway Steel and Iron in Ontario.

In April, 1897 the Ontario Legislature enacted:

1.—(1) Where the Legislature has heretofore authorized or shall hereafter authorize the payment of money to any railway company by way of subsidy, there may be delivered to the company, at the discretion of the Lieutenant-Governor in Council as an equivalent for and in lieu of the bonus (wholly where so provided by the terms of the subsidy or agreed to by the company, and in other cases in part not exceeding fifty per cent. of such subsidy), railway steel or iron manufactured in Ontario from ore of which at least two thirds has been obtained from Ontario mines;

and Provincial scrip or certificates in payment of the steel or iron so delivered may be issued payable to the manufacturer, by whom the same has been delivered in lieu of the railway company.

(2) The word "railway" in this Act means a railway operated by steam or other motive power.

The expression "railway steel or iron" includes rails, girders, bridges and all members or parts thereof, and such other manufactures of steel or iron as are requisite and suitable for the construction of the permanent way.

2. Tenders shall be invited by public advertisement for supplies of railway steel or iron of such dimensions, weight and quality, and to be delivered at such times and places and upon such conditions as are specified and as have been determined on by the Lieutenant-Governor in Council.

3. Where the tenders are unsatistactory, or where there is but one tender and the price at which the steel or iron is to be delivered to the railway company is matter of difference between the railway company and the manufacturer, the Lieutenant-Governor in Council shall determine the same.

4. Unless and until properly applied and fixed as part of the permanent way such steel or iron, though delivered to the railway company, shall remain the property of the Province, and if not so applied and fixed to the satisfaction of the Lieutenant-Gover nor in Council within the period limited by the Order in Council, the province may at any time after the expiration of that period enter, and resume possession of such steel or iron not then so applied and fixed, and may make other disposition of the same.

Progress of the Industry.

It is about nine years since the advance in customs duties on iron was made in Canada, and the question may now be fairly asked if the results of our experience, during these nine years of the manufacture of iron, are such as to warrant us in saying that the policy then inaugurated has been successful.

In dealing first with the manufacture of pig iron, it is absolutely necessary to bear in mind the conditions under which the smelting of iron is carried on in Canada. The chief deposits of iron ore and coal, in close proximity to each other, are found in the Province of Nova Scotia, while the principal markets for the sale of pig iron are the Provinces of Quebec and Ontario, separated from the furnaces by many hundred miles of railway. In this country, too, all the work in connection with mining the ores, making the coke, or charcoal, as the case may be, requires to be done by the smelting company, entailing the expenditure of a very large capital in comparison with the value of the iron when smelted. In the United States, on the other hand, the smelting of iron in blast furnaces is comparatively a simple operation. The blast furnace proprietor purchases his ore of a specified analysis from the owners of the mines, his coke or charcoal from other sources, and all he has to do is to smelt them in such a way that he knows exactly the quantity and quality of the iron he will produce. The Canadian smelter has to explore the whole country for iron suitable for his work. He has to keep mining plants in operation at different places, chemists analyzing the various qualities of ore produced, and very often he has to abandon mines yielding large

quantities of ore, for the reason that the percentage of manganese, phosphorous, sulphur or titanium contained in it is altogether too high to admit of its being used profitably in his furnace. This has been the actual experience of Canadian furnacemen, and the work they have done and the difficulties they have overcome, and which still confront them, are such as might well daunt the most enterprising. This has been fully appreciated by the Liberal Government of the Province of Ontario, which has granted a bonus equivalent to $1.00 per ton on pig iron smelted from ore raised in the Province of Ontario, and which will doubtless have the effect of bringing into the market a large quantity of Ontario ore which has hitherto not been available for use.

In the case too of charcoal furnaces, the great question of the supply of charcoal has to be faced. For this purpose it is necessary to keep a lumber camp of choppers in the woods, and to cut every log that is used for making charcoal. Compare this with the charcoal iron furnacemen in the United States, where the supply of charcoal can readily be supplied by those who manufacture it for the sake of the chemical by-products. Taking all these things into account, and many other difficulties which might be mentioned, it is gratifying to note that the domestic production of pig iron has increased from 24,373 tons in 1889-90 to 62,522 tons in 1893-94. At the close of the calendar year 1896 the relative position was practically unchanged. Despite dullness of trade throughout the year, the output of domestic iron reached 61,839 tons. The consumption of pig iron, both imported and domestic, in the two first years mentioned, is as follows:—

111,986 tons in 1889-90
107,804 " 1893-94

From these figures it will be seen that the proportion produced in Canada of the total consumption of pig iron was 21.76 per cent. in 1889-90, and 58·00 in 1893-94.

When we consider the fact that the ruling price of American iron during the past two or three years has been altogether below the average of previous years, and in a great many cases confessedly below the cost of production, it is almost surprising that the imports have not been larger. This brings up another point of great interest in connection with the imports of iron. Ten years ago the bulk of our supplies came from Great Britain, and pig iron, bar iron, etc., formed the principal part of the heavy weight brought over by the ocean steamers. This state of affairs no longer continues, and the ocean liners find it hard work to get sufficient dead weight. Any attempt, however, to interfere with the tariff now would not have the effect of restoring the former condition of things. It would simply mean that the place now occupied by Canadian manufactures would be filled by American instead of British goods, unless indeed the tariff embodies a preferential clause in favor of the products of British manufacture. The development of the iron trade of the United States has been such that, as the result of the most liberal protection within its own borders, iron and steel are now produced at prices as low, or nearly so, as similar products in Great Britain and the continent of Europe. Such a state of affairs we fully hope will be the result of the present policy in this country. It is folly, however, to imagine that the few years that have elapsed since this policy was introduced have been sufficient to set on a firm basis an industry requiring such a large investment of capital.

Coke Pig Iron.

The Londonderry Iron Co., Ltd., succeeded in 1887 to the property of the old Steel Co. of Canada, and has operated its plant since that year. Its output has generally run from 50 to 85 gross tons per day. The annual output since 1888, according to the published returns, are about as follows:—

Londonderry Output.

1888	15,600 tons.	1893	21,200 tons.
1889	19,000 "	1894	8,100 "
1890	16,500 "	1895	16,000 "
1891	18,300 "	1896	10,497 "
1892	24,750 "		

For the first five years of its existence this company also turned out a large quantity of puddled bars, and rolled them into bar iron. The "Siemens" brand of bar iron was then recognized as of fine quality, especially as regards strength, and compared very favorably in this respect with ordinary imported irons. Owing to the fact, however, that the duty on imported wrought scrap was at a very low rate, leading to its use almost entirely in the manufacture of bar iron in Canada, this branch of the company's operations was stopped about 1891. Last year, however, the duty on scrap was increased to its present rate of $4.00 per ton, and the company has again started its puddling furnaces, which have a capacity of about 500 tons per month. The product of these furnaces has been placed, to a very large extent, for the year, and the quality of the puddled bars has been found of the most satisfactory nature. As will be seen from the yearly output, the furnace had its best runs during the years 1889 to 1893. In the year 1894 it was shut down for the greater part of the year, owing to the lowness of water and other causes, which accounts for the small output that year. The quality of "Siemens" pig iron was for many years of a very high character, and the iron was able to compete favorably with imported Scotch brands. It was a very strong iron and formed an excellent mixture with the best brands of Scotch iron, such as "Summerlee," "Gartsherrie," "Langloan" and "Calder," these brands being of a more fluid and open nature than "Siemens." For many years the company's mines, operated by themselves, supplied all the necessary ore, which gave the iron a uniform character. During the last two or three years, however, they have drawn a certain proportion of their supply from another source, the result being that the iron has been of a more open and silicious nature. The great drawback in connection with iron making in Nova Scotia has been the uncertain nature of the ore supply, and this, more than anything else, has rendered the product somewhat uncertain in its character..

The prices that have prevailed during these nine years have been to a large extent influenced by the competition of foreign iron imported either from Great Britain or from the United States. From the year 1888 down to 1891-2 the competition was almost entirely from Great Britain, but during the past three or four years British imports have been seriously curtailed, the competition coming from the United States.

As an evidence of the way in which American iron is displacing that of English manufacture, may be mentioned that the imports of British iron for the fiscal year

ending 30th June, 1895, were only 5,666 gross tons, compared with 24,600 tons imported from the United States. The figures for the fiscal year 1895-6 show that we imported from Great Britain 6,521 tons, and from the U. S. 32,597 tons.

The total shipments of Scotch iron to British North America during 1896, is set down in Messrs. Jas. Watson & Co.'s circular of January, 1897, as 2,454 tons, whereas in 1892 the shipments of Scotch iron to Canada reached 22,913 tons; a decline of almost 20,000 tons in 1896 in Scotch iron alone, as against that of 1892, is very significant.

Although it is difficult to give anything like accurate prices for Canadian iron, the following may be considered as an indication of the average figures realized at the furnace during the past nine years.

The highest year was 1890. During that year American No. 2 iron rose to $19.50 at Chicago, but quickly subsided after the temporary boom was over. Scotch iron, too, was much excited at the same time and sales of "Summerlee" were made as high as $25.00 in Montreal.

About the year 1892 the competition of Southern American furnaces began to be felt, and prices declined considerably, reaching their lowest ebb about April, 1895, when it is said Southern No. 2 was actually sold at about $6.50 at the furnaces in Alabama and Tennessee, a price which was certainly below cost. Immediately aftewards a strong demand set in, and prices rose generally in the United States from $5.00 to $8 00 per ton, according to the quality of the iron.

1896 saw a reaction again to lower prices, due in part to the unusual disturbances of the Presidential election, prices ranging for Southern iron from $9.00 per ton in January to as low as $6.50 per ton in July, whilst Northern Bessemer iron quoted in January at $16.00 per ton, was less than $10.00 in July, choice brands of foundry iron ranging from $13.50 in January to $12.50 at the close of the year. The best authorities unite in the opinion that at the figures mentioned at the close of the year, none but the most favorably situated furnaces can hope to make money, and "prudence will recommend a curtailment of output until prices again advance.

Comparative Prices of American and Canadian Iron.

Year.	Canadian Iron at the Furnace in Nova Scotia.	American Iron in Chicago.
1888	$16.00 to $18.00	$17.20
1889	17.00 to 18.00	15.80
1890	18.00 to 19.00	16.75
1891	16.00 to 17.00	15.00
1892	15.00 to 16.00	14.00
1893	13.00 to 14.00	13.00
1894	12.00 to 13.00	10.50
1895	11.00 to 15.00	9.50 (lowest.)
1896	14.00 to 13.00	10.50

The figures given for American iron are the average of the monthly prices, except in the year 1895, when the lowest price only is given. During the same year the fluctuations of Scotch iron have not been of a very serious nature. The following average prices are official for Scotch "warrants," in store at Glasgow :—

1888	39 11	$ 9.71
1889	47/ 9	11.60
1890	49/ 6	12.04
1891	47/ 1	11.45
1892	41 10	10.18
1893	42/ 3	10.28
1894	42 8	10.38
1895	44/ 5	10.80
1896	47/ 6	11.56

NOTE.—The price of warrants is usually about $1.25 to $1.50 under the price of shipping brands, such as "Summerlee," "Gartsherrie," etc.

During the latter half of 1895 the prices realized for Canadian iron were very much better than those current during the previous eighteen months.

The following prices of No. 1 "Summerlee" pig iron, delivered on dock, Montreal, duty paid, will also be of interest. They are of course approximate, but will be found near the mark:—

1889	$20.50 to	$24.00
1890	25.00 to	21.00
1891	21.00 to	21.50
1892	19.00 to	18.25
1893	19.00 to	18.00
1894	19.00 to	20.00
1895	18.50 to	20.00
1896	18.50 to	20.00

The coke furnace of the New Glasgow Iron, Coal and Railway Co., Ferrona, was put into blast in 1892. Its output is much larger than that of the Londonderry Iron Co., and it has been able to exceed 100 tons per day. The quality of ores around New Glasgow are manganiferous, and for some time this company was troubled by an excess of manganese in their iron, which rendered it unsuitable for most descriptions of foundry work. About one-half, however, of the output of the furnace was taken up by the Nova Scotia Steel and Forge Co., for making into steel in their Siemens-Martin furnaces. For this purpose a high percentage of manganese is necessary, so that the iron gave excellent results for steel making. In order, however, to obviate the trouble in the foundry iron, the company use a certain quantity of ore brought from a distance, by means of which they have been able to overcome the high manganese in their own ore, bringing the percentage down to suitable proportions for a good foundry iron.

The output of the Ferrona furnace since 1893 has been as follows:—

1893	22,500 tons.
1894	28,142 "
1895	17,331 "
1896	20,470 "

The prices that have ruled for "Ferrona" iron are very largely the same as those quoted for the "Siemens" brand of the Londonderry Iron Co. The two brands to-day have a great deal in common, as both furnaces have drawn a large part of their ore from the same district to mix with their own local supply. For the past year the Ferrona Co. have been investigating some large iron properties owned by them in Newfoundland, and shipments of this ore have already been brought over to Pictou. It has not yet been demonstrated, however, at what price this can be laid down at the furnace, but if the quality is as satisfactory as the quantity appears to be large, there is no doubt that the company will not require to trouble itself about its ore supply for a long time to come. It must at the same time be taken into account that the bounty paid by the Federal Government is only on iron produced from Canadian ores, so that a loss of the bounty on the proportion of Newfoundland ore must be taken into account in figuring out its cost to the furnace.

Early in the year 1895 the New Glasgow Iron, Coal and Railway Co. was amalgamated with the Nova Scotia Steel and Forge Co., under the name of the Nova Scotia Steel Co., Ltd. The steel department has always been a very paying concern, and it is to be hoped that the amalgamation of the two will have good results to both companies.

The only other coke furnace in Canada is that of the Hamilton Blast Furnace Co. at Hamilton, Ont., which has now been over a year in operation. The returns for 1896 show that the Hamilton Co. produced 25,270 tons of coke iron, using in the manufacture of this about 72½ per cent. of American ore and 27½ per cent. of Canadian material. This company is now making arrangements to draw its supply of ore largely from the Lake Superior region, about Port Arthur, and from the vicinity of the Desbarats property near Sault Ste. Marie. In view of the present somewhat undeveloped condition of Ontario ore, it is difficult to say what quantity of it can be used. Considerable experimenting will naturally have to be done before its value can be fully demonstrated.

The combined product of these three furnaces ought to provide for all the consumption of foundry pig iron in Canada. It is a well-known fact, however, in foundry practice, that a mixture of several irons gives better results than the use of one brand alone, and there is no doubt that for some time to come there will be a certain quantity of foreign iron, either Scotch or American, imported into the country to mix with Canadian brands. This was the experience of furnacemen in the United States until as late as 1881, but American iron has now got past the initial stage, and the various qualities produced have altogether taken the place of the imported Scotch irons, which, in spite of the high protection, were brought in large quantities to the country until as late as the year mentioned.

Charcoal Pig Iron.

If there is one enterprise more than another that Canada is fitted by nature to sustain, it is the manufacture of special grades of charcoal pig iron, approximating in quality that of Sweden. Everywhere throughout the provinces of the Dominion, maple, birch and other hard woods, most suitable for making charcoal fuel of the

highest standard, abound, and this, so far as Quebec, Ontario and Nova Scotia are concerned, in close proximity to iron ore and limestone, and also to railways and the market.

Until quite recently the tendency in all iron-producing countries was towards cheap material, hence the great increase in the output of iron smelted with mineral fuel. The depletion of the forests in most countries accounts in part for the decline in the production of charcoal metal.

The experience of engineers the world over in attempting to use cheap material in high-class work, has resulted, within the past year or two, in a great change, and the prospects now are that there will be a greater field in the near future for high-class charcoal iron than there ever was before. The demand will come from various directions. Charcoal metal must continue to be used in the manufacture of railway car and electric car wheels, upon the safe quality of which human life depends. Even a greater use for it will probably be found in the building of land fortifications and redoubts, armor plate and projectiles, the manufacture of special grades of wrought iron, where great strength is demanded, bicycle tubes, electrical dynamos, etc.

In charcoal iron the tendency will be more and more towards the very highest quality, regardless of price, whereas in coke iron the tendency will probably still continue in the direction of cheaper grades, for work of inferior quality.

As pointed out, Canada possesses all the natural advantages for the production of charcoal pig iron, not only for her own wants, but for export. Her only possible rivals, at least in the immediate future, are the United States and Sweden. The importance of the Swedish iron industry to that country should point capitalists in the direction of a similar development in Canada. The history of the manufacture of charcoal iron in Canada in the past is very similar to that of the same industry in other countries. Here, as elsewhere, the first iron produced was smelted with charcoal, but the work was attempted under most adverse circumstances, at a time when the country was absolutely without railway facilities, and the furnaces were run intermittently and on small outputs, making it next to impossible to succeed, especially in competition with inferior mineral-fuel iron imported free of duty from other countries, and at a time when the inferior iron met all the simple requirements of the colony. Now that the reaction has set in, and the requirements of the closing days of the 19th century are such that there is a large market opening up for the superior qualities of metal, it is a happy thing that Canada possesses at least the nucleus of a great industry. That the present development, moderate though it be, is due to the protective duties and encouragement granted by the Dominion Government in 1887, is beyond question. At that time Canada possessed only two charcoal iron furnaces, one at Drummondville, Que., with a capacity of about 1,500 tons of charcoal metal per annum, and the other at Radnor Forges, with a capacity of about 1,000 tons per annum. The work done at Radnor Forges was in almost direct continuance of the work started 225 years ago, in the earliest days of New France, at the St. Maurice forges, and the metal produced then and now from the famous ores of the Three Rivers district is unexcelled in quality by anything made in rival markets. The protective policy of 1887 resulted in the purchase and re-construction of the works at

Radnor Forges by the Canada Iron Furnace Co., Ltd., and the modern furnace now in operation there was built in 1891. Since that date 32,000 tons of the very highest class of charcoal metal has been successfully produced, and has found a market not only at home, in competition with American charcoal iron, but the product ("C.I.F." Charcoal Pig) has found its way in foreign markets, where it has attracted unusual attention from leading engineers.

A new furnace was erected in 1891 at Bridegeville, N.S., by the Pictou Charcoal Iron Co., and within the past year a puddling plant has been established there by the same company, wherein almost, if not all their output of upwards of 5,000 tons per annum, will be converted into puddled bars for shipment to the various rolling mills of the Dominion.

The work of the past few years, when all the difficulties of establishing such industries are considered, has been very satisfactory indeed. It has been amply demonstrated that Canadian made charcoal metal ranks in quality with the very best metal made in Sweden, and that it is now securing a market as against the Swedish product.

That the progress of the industry has been tardy, in comparison with that of other Canadian enterprises, is largely due to natural causes. It must be remembered that in the initial years the establishment of a charcoal iron industry in this country means not only a large outlay for plant, but also for exploring and developing ore fields, forests and other sources of supply. Not the least of kindred difficulties in this new country is the training of labor, so as to attain the standard of efficiency existing in the various departments of this work in other countries. While the Canadian producer of charcoal iron is undoubtedly at a disadvantage in regard to cost of production in the initial years, by being forced to explore and make his own raw material, yet this very fact guarantees the consumer a more uniform grade of iron than he is likely to get from American iron masters, the latter being governed in their purchase of supplies from miners by the price of the material, quite as much as by the quality of the material itself.

In the case of the charcoal iron made by the Canada Iron Furnace Co., Ltd., in the Province of Quebec, the company controls large areas of bog and lake ore deposits, which are consistent in quality, and the product therefore is bound to be of the same good quality from year to year. This has been well attested by actual results secured by this company, and by their predecessors, in work extending over almost two centuries.

One of the most important developments in connection with the manufacture of iron has been the great increase in the quantity of merchant bars of iron and steel rolled in this country. In iron it is true that the great bulk of bars have been rolled from scrap, which makes at the best an uncertain product, due to the variable quality of the scrap used in its manufacture. At the same time it is right to bear in mind that this quality is quite good enough for the great bulk of the purposes for which it is required in Canada.

The increase in the duty on wrought scrap iron, which came into operation in 1894, has not so far made much difference in the quantity of scrap used, but this

may be traced to the unprecedentedly low prices for this material which prevailed in the United States during 1894 and part of 1895.

Owing, however, to the re-opening of the puddling furnaces at Londonderry, N.S., it is hoped that their puddled bars will supplant scrap to the extent of their output, and thus help to improve the quality of the iron rolled in this country.

Previous to the increased duty on bar iron, the Ontario Rolling Mill Co. in Hamilton, and the Rolling Mills of St. John, N.B., were the only concerns rolling merchant bars. To-day there are no less than four large rolling mills employed in their manufacture in Montreal alone. The result has been that the importations of bar iron have fallen off considerably, and the bulk of it is now made in this country. These importations, too, have been mostly of special sizes of common iron, and special qualities, such as "Lowmoor," "Bowling," "Netherton" and other fine qualtities not rolled by the local mills. A special feature in connection with this branch of the iron trade has been the rolling of a fine quality of charcoal bar iron made out of the "C.I.F." brand of Three Rivers charcoal pig iron, from Radnor Forges, Que. The result has been a specially fine quality of bars, quite equal to the best brands of Norway iron. Samples of this product have been tested by the authorities of McGill college, with most satisfactory results.

Taking a general view of the progress of the iron trade, therefore, during the past eight or ten years, it is safe to say that considerable progress has been made, but it will also be safe to say that ten years is too short a time to develop an industry of such magnitude as the manufacture of iron and steel. A very large amount of capital has been invested in this work, and it is to be hoped that the country will appreciate the efforts which have been made by private individuals to develop the mining resources of the country, and that every encouragement will be given to carry these efforts to a successful issue, which we need hardly say will tend very much to the general prosperity of the country.

Duty on the Leading Imports of Iron and Steel, 1897.

Iron or steel scrap, wrought, being waste or refuse, including punchings, cuttings or clippings of iron or steel plates or sheets having been in actual use; crop ends of tin plate bars, blooms and rails, the same not having been in actual use, $1.50 per ton.

Nothing shall be deemed scrap iron or scrap steel except waste or refuse iron or steel fit only to be re-manufactured in rolling mills.

Iron in pigs, iron kentledge, and cast scrap iron, $2.50 per ton.

Ferro-silicon, ferro-manganese, and spiegeleisen, 5 per cent. *ad valorem.*

Iron or steel ingots, cogged ingots, blooms and slabs; billets unfinished measuring in size not less than ten united inches or circumference; puddled bars, loops or other forms less finished than iron or steel bars but more advanced than pig iron, except castings, $4 per ton.

Rolled iron or steel angles, tees, beams, channels, girders and other rolled shapes or sections, weighing less than thirty-five pounds per lineal yard, not punched, drilled or further manufactured than rolled, n.o.p., $7 per ton.

[ERRATUM.]

TARIFF AMENDMENTS.

The following amendments to the Tariff respecting imports of iron and steel, and mining and smelting machinery, went into operation on 26th May, 1897 :—

Iron or steel scrap, $1.00 per ton.

Iron or steel ingots, $2.00 per ton.

Rolled iron or steel angles, tees, beams, channels, joists, girders, zees, stars or other rolled shapes, or trough, bridge, building or structural rolled sections or shapes, not punched, drilled or further manufactured than rolled, n.e.s., and flat eye-bar blanks, not punched or drilled, 10 p.c. *ad valorem.*

Universal mill or rolled edge bridge plates of steel when imported by manufacturers of bridges, 10 p.c. *ad valorem.*

Rolled iron or steel plates, not less than 30 inches in width, and not less than one-quarter of an inch in thickness, n.o.p., 10 p.c. *ad valo em.*

Steel in bars, bands, hoops, scrolls or strips, sheets or plates of any size, thickness or width, when of greater value than two and one-half cents per pound, 5 p.c. *ad valorem.*

Iron or steel bridges or parts thereof, iron or steel structural work, columns, shapes or sections, drilled, punched or in any further stage of manufacture than rolled or cast, n.e.s., 35 p.c. *ad valorem.*

Tubes of rolled steel, seamless, not joined or welded, not more than one and one half inches in diameter, and seamless steel tubes for bicycles, 10 p.c. *ad valorem.*

Iron or steel cut nails and spikes (ordinary builders'), and railroad spikes, n.o.p., ½c. per lb.

Wire nails of all kinds, n.o.p., three-fifths cents per lb.

Wire, viz., brass wire, plain, 10 p.c.

Wire cloth, or woven wire of brass or copper, 25 p.c. *ad valorem.*

Wire cloth or wove wire, and wire netting of iron or steel, 30 p.c.

TARIFF RESPECTING MINING MACHINERY.

Steam engines, boilers, ore crushers and rock crushers, stamp mills, Cornish and belted rolls, rock drills, air compressors, cranes, derricks, percussion coal cutters, pumps, pressure and exhaust fans, n.e.s., 25 p.c. *ad valorem.*

Mining, smelting and reducing machinery, viz. :—Rotary pressure blowers, coal cutting machines, except percussion coal cutters, coal heading machines, coal augers and rotary coal drills, core drills, miners' safety lamps, coal washing machinery, coke-making machinery, ore drying machinery, ore roasting machinery, electric or magnetic machines for separating or concentrating iron ores, blast furnace water jackets, converters for metallurgical processes in iron or copper, briquette making machines, ball grinding machines, copper plates, plated or not, machinery for extraction of precious metals by the chlorination or cyanide processes, monitors, giants and elevators for hydraulic mining, amalgam safes, automatic ore samplers, automatic feeders, jigs, classifiers, separators, retorts, buddles, vanners, mercury pumps, pyrometers, bullion furnaces, amalgam cleaners, gold mining slime tables, blast furnace blowing engines, wrought iron tubing, butt or lapp welded, threaded or coupled or not, not less than 2½ inches diameter, when imported for use exclusively in mining, smelting, reducing or refining..... Free.

Rolled iron or steel angles, tees, beams, channels, joists, girders, zees, stars or other rolled shapes, or trough, bridge, building or structural rolled sections or shapes, not punched, drilled or further manufactured than rolled, n.e.s., and flat eye-bar blanks not punched or drilled, 15 per cent. *ad valorem.*

Bar iron or steel, rolled or hammered, whether in coils, rods. bars or bundles, comprising rounds. ovals, and squares, and flats number sixteen guage and thicker n.o.p., and rolled iron or steel hoops, bonds, scroll or strips, eight inches or less in width, number 16 guage and thicker, n.e.s., $7 per ton.

Universal mill or rolled edge bridge plates of steel when imported by manufacturers of bridges, 15 per cent. *ad valorem.*

Rolled iron or steel plates, not less than 30 inches in width, and not less than one-quarter of an inch in thickness, n.o.p., 15 per cent. *ad valorem.*

Rolled iron or steel sheets or plates, sheared or unsheared, and skelp iron or steel, sheared or rolled in grooves, n.e.s., $7 per ton.

Skelp iron or steel, sheared or rolled in grooves, when imported by manufacturers of wrought iron or steel pipe for use only in the manufacture of wrought iron or steel pipe in their own factories, 5 per cent. *ad valorem.*

Rolled iron or steel sheets thinner than No. 17 guage, n.o.p. ; Canada plates, Russia iron, flat or corrugated galvanized iron or steel sheets, terne plate, and rolled sheets of iron and steel coated with zinc, spelter or other metals, of all widths or thicknesses, n.o.p., and rolled iron or steel hoops, bands, scroll or strips, thinner than No. 16 guage, n.e.s., 5 per cent. *ad valorem.*

Chrome steel, 15 per cent. *ad valorem.*

Steel, rolled or hammered, in bars, bands, hoops, scroll or strips, sheets or plates of any size, thickness or width, when of greater value than four cents per pound, n.o.p., 15 per cent. *ad valorem.*

Swedish rolled iron and Swedish rolled steel nail rods under half an inch in diameter for the manufacture of horse shoe nails, 15 per cent. *ad valorem.*

Iron and steel railway bars or rails of any form, punched or not punched, n.e.s. for railways, which term for the purposes of this item shall include all kinds of railways, street railways and tramways, even although the same are used for private purposes only, and even although they are not used or intended to be used in connection with the business of common carrying of goods or passengers, 30 per cent. *ad valorem.*

Railway fish plates and tie plates, $8 per ton.

Switches, frogs, crossings and intersections for railways, 30 per cent. *ad valorem.*

Locomotives for railways, n.e.s., 35 per cent. *ad valorem.*

Iron or steel bridges, or parts thereof; iron or steel structural work, columns, shapes or sections, drilled, punched or in any further stage of manufacture than as rolled or cast, n.e.s., 30 per cent. *ad valorem.*

Forgings of iron and steel of whatever shape or size or in whatever stage of manufacture, n.e.s., 30 per cent. *ad valorem.*

Iron or steel castings in the rough, n.e.s., 25 per cent. *ad valorem.*

Stove plates, stoves of all kinds, for oil, gas, coal or wood, or parts thereof, and sad or smoothing, hatters' and tailors' irons, plated wholly or in part, or not, 25 per cent. *ad valorem.*

Springs, axles, axle bars and axle blanks, and parts thereof, of iron or steel, for railway or tramway vehicles, 35 per cent. *ad valorem.*

Springs, axles, axle bars and axle blanks, and parts thereof, of iron or steel, including cart or waggon skeins or boxes, n.e.s., 30 per cent. *ad valorem.*

Cast iron pipe of every description, n.e.s., $8 per ton.

Wrought iron or steel boiler tubes, including flues and corrugated tubes for marine boilers, 5 per cent. *ad valorem.*

Tubes of rolled steel, not joined or welded, not more than one and one-half inches in diameter ; and seamless steel tubes for bicycles, 15 per cent. *ad valorem.*

Wrought iron or steel tubing, plain or galvanized, threaded and coupled or not, over two inches in diameter, n.e.s., 15 per cent. *ad valorem.*

Wrought iron or steel tubing, plain or galvanized, threaded and coupled or not, two inches or less in diameter, n.e.s., 35 per cent. *ad valorem.*

Other wrought iron or steel pipe or tubing, plain or galvanized, riveted, corrugated or otherwise manufactured, n.o.p., 30 per cent. *ad valorem.*

Iron or steel fittings for iron or steel pipe. of every description, and chilled iron or steel rolls, 30 per cent. *ad valorem.*

Iron or steel cut nails and spikes (ordinary builders'); and railroad spikes. n.o p., 30 per cent. *ad valorem.*

Wrought and pressed nails and spikes, trunk, clout, coopers', cigar box, Hungarian, horse-shoe, and other nails; horse, mule, and ox shoes, 30 per cent. *ad valorem.*

Wire nails of all kinds, n.o.p., 35 per cent. *ad valorem.*

Composition nails and spikes and sheathing nails, 15 per cent. *ad valorem.*

Iron or steel shoe tacks, and ordinary cut tacks, leathered or not, brags, sprigs and shoe nails, double pointed tacks, and other tacks of iron and steel, n.e.s., 35 per cent. *ad valorem.*

Screws, commonly called " wood screws," of iron or steel, brass or other metal, plated or not, including lag or coach screws, and machine or other screws, n.o.p , 35 per cent. *ad valorem.*

Coil chain, chain links, and chain shackles, of iron or steel, $\frac{5}{16}$ of an inch in diameter and over, 5 per cent. *ad valorem.*

Barbed wire and other wire for fencing, until 1st January, 1898, 15 per cent. *ad valorem.*

Thereafter to be free; and all articles upon which duties are levied which enter into the cost of the manufacture of the said barbed or other wire shall, for this purpose then be free, the whole subject to regulations to be made by the Controller of Customs.

Buckthorn, and strip fencing, of iron or steel, 25 per cent. *ad valorem.*

Wire, of all metals and kinds, n.o.p., 20 per cent. *ad valorem.*

Wire rope, stranded or twisted wire, clothes line, picture or other twisted wire and wire cable, n.e.s., 25 per cent. *ad valorem.*

IMPORTS OF PIG IRON, 1895 96.

1895.	By Provinces. Tons.	Value.	FROM	Tons.	Value.
Charcoal Pig:		$			$
Ontario	2,537	28,165	United States	2,780	31,171
Quebec	243	3,006			
Total	2,780	31,171			
All Other Pig:					
Ontario	22,593	237,030	Great Britain	6,399	73,897
Quebec	7,585	84,734	B. W. Indies	48	240
Nova Scotia	1,193	16,476	United States	25,151	266,888
New Brunswick	54	572			
Manitoba	13	144			
British Columbia	149	1,922			
P. E. Island	11	147			
Total	31,598	341,025			

1896.	By Provinces. Tons.	Value.	FROM	Tons.	Value.
Charcoal Pig:		$			$
Ontario	917	11,726	United States	917	11,726
All Other Pig:					
Ontario	27,736	290,933			
Quebec	6,845	81,743			
Nova Scotia	1,170	17,514	Great Britain	5,242	60,907
New Brunswick	29	343	United States	30,774	332,780
Manitoba	17	195		36,016	393,687
British Columbia	219	2,959			
	36,016	393,687			

CONSUMPTION OF STEEL RAILS.

The following shows the mileage of Canadian Railways since 1867:—In 1876 the range of the weight of the steel rail then laid was from 56 to 60 lbs. per yard. In 1895 the range was from 56 to 80 lbs., the St. Claire tunnel being laid with rails weighing 100 lbs. per yard.

CONSUMPTION OF STEEL RAILS—*(Continued.)*

Year ended 30th June.	Mileage in Operation.	Annual Increase.	Steel Rails.		Mileage of Iron Rails.	Mileage of Sidings.
			Mileage.	Increase.		
1867	2,218	....	.....	.....	.....	.....
1868	2,390	172	.....	.....	.....	.....
1869	2,460	70	.....	.....	.....	.....
1870	2,608	148	.....	.....	.....	.....
1871	2,679	71	.....	.....	.....	.....
1872	2,928	249	.....	....	.....	.....
1873	3,478	550	.....	.....	.....	.....
1874	4,100	622	.....	.....	.....	.....
1875	4,826	726	2,054.75	.....	2,746.75	655.50
1876	5,157	331	2,373.75	319	2,758.00	637.00
1877	5,574	417	2,765.25	391.50	2,783.50	688.00
1878	6,143	569	3,583.08	817.75	3,258.25	747.75
1879	6,484	341	3,813,80	230.72	3,177.25	743.57
1880	6,891	407	4,049.53	235.73	3,157.44	783.26
1881	7,260	369	4,935.15	885.62	2,660.66	878.47
1882	7,530	270	6,085.41	1,150.26	1,983.53	952.89
1883	8,726	1,196	7,340.67	1,255.26	1,725.30	1,099.80
1884	9,577	851	7,975	.....	1,602	1,165
1885	10,273	696	9,045	1,070	1,228	1,197
1886	10,773	500	9,553	508	1,220	1,316
1887	11,793	1,020	10,618	1,065	1,175	1,462
1888	12,184	391	11,146	528	1,038	1,532
1889	12,585	401	11,799	653	786	1,576
1890	13,151	566	12,486	687	665	1,679
1891	13,838	687	13,074	588	764	1,666
1892	14,564	726	13,956	882	608	1,923
1893	15,005	441	14,568	612	437	2,013
1894	15,627	622	15,227	659	400	2,017
1895	15,977	350	15,631	404	346	2,055
1896	.....	....	.....	.....	.....	.....

IMPORTS OF FREE MINING MACHINERY, 1890–96.

Fiscal Year.	Ontario.	Quebec.	New Brunswick.	Manitoba.	British Columbia.	Nova Scotia.	Total.
1890	$ 473	$ 2,255	.....	.....	$ 740	.....	$ 3,768
1891	26,134	25,378	$2,583	$ 4,895	4,864	$14,578	78,432
1892	25,824	12,096	2,030	6,364	1,750	13,784	61,848
1893	27,889	18,519	30	9,166	9,585	22,019	87,208
1894	39,198	13,683	940	1,322	5,282	26,610	87,035
1895	50,540	17,338	1,064	1,575	47,519	51,713	169,749
1896	118,772	24,805	730	3,060	36,254	9,453	193,098

STEEL RAIL IMPORTS BY COUNTRIES, 1891–6.

(Weighing not less than 45 lbs. per lineal yard.)

Year.	Great Britain.		United States.		Belguim.		Germany.		Total.	
	Cwt.	Value.	Cwt.	Value.	Cwt.	Value.	Cwt.	Value.	Cwt.	Value:
		$		$		$				$
1891	2,234,375	2,767,468	286,935	429,812	.....	.....	.....	.....	2,521,310	3,197,280
1892	1,495,963	1,539,449	158,972	199,212	.....	.....	.....	.....	1,654,935	1,738,661
1893	1,911,170	1,846,750	103,358	138,445	8,440	8,024	.....	.....	2,022,968	1,993,219
1894	1,643,050	1,608,967	72,468	109,029	24,825	23,052	9,005	7,612	1,749,348	1,748,660
1895	947,809	813,078	14,157	15,093	10,612	9,973	.....	.....	972,578	838,144
1896	691,283	627,995	279,805	330,487	12,403	19,216	60,020	56,880	1,043,511	1,034,578

STEEL RAIL IMPORTS BY PROVINCES, 1892–6.

Provinces.	1892.		1893.		1894.		1895.		1896.	
	Cwt.	Value.	Cwt.	Value.	Cwt.	Value	Cwt.	Value.	Cwt.	Value.
		$		$		$		$		$
Ontario	165,052	191,799	209,832	226,299	109,765	146,120	8,722	8,644	241,370	278,964
Quebec	1,433,573	1,474,963	1,677,164	1,639,229	1,438,102	1,283,693	864,294	728,577	682,774	617,345
Nova Scotia	31,310	33,607	127,184	118,978	52,939	50,031	64,215	63,166	36,043	35,906
Manitoba	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
New Brunswick	.....	.....	8,788	8,713	524	667	.....	.....	12,754	9,734
British Columbia	25,000	38,292	.....	.....	129,706	248,149	1,000	810	58,167	73,413
P. E. Island	.....	.....	.....	.....	17,900	19,200	13,547	16,263	12,403	19,216
N. W. Territories	.....	.....	.....	.....	412	800	20,800	20,684	.....	.....
Total	1,654,935	1,738,661	2,022,968	1,993,219	1,749,348	1,748,660	972,578	838,144	1,043,511	1,034,578

SOME OF THE PRINCIPAL IMPORTS OF IRON AND STEEL, AND THEIR MANUFACTURES, DURING THE YEAR ENDED 30TH JUNE, 1896.

IMPORTS.	From Great Britain.		From United States.		Value from All Sources.
	Quantity	Value.	Quantity	Value.	
Angles, channels and other sections (rolled) weighing less than 35 lbs. per lineal yard ....Cwt.	25,641	$27,254	22,064	$29,028	$58,867
Angles, channels and other sections (rolled) weighing not less than 35 lbs per lineal yard..Cwt.	32,857	38,631	17,361	26,545	101,504
Axles, car..... "	4,603	10,214	4,433	8,563	19,448
" other..... Lbs.	1,878	257	277,160	17,843	18,773
Bar iron.....Cwt.	28,524	52,218	37,453	66,652	120,552
Bars, puddle.... ..... "	116,296	98,884	7,929	8,290	110,757
" railway..... Tons	3,366	64,223	3,326	61,115	125,338
" steel .....Cwt.	55,771	128,518	79,240	182,141	317,070
Beams, joists, girders and other building or bridge structural sections weighing not less than 25 lbs. per lineal yard.....Cwt.	35,483	36,406	19,438	25,662	110,257
Beams for ships, etc..... "	14,209	17,818	838	2,010	21,250
Boiler plate, pieces..... "	3,145	2,634	1,840	1,771	4,405
Bolts and rivets..... Lbs.	61,626	1,714	1,024,785	36,924	38,638
" " less than ⅜ in. in dia.. "	6,523	691	98,681	6,994	7,685
Bridge and structural iron.. "	77,785	1,959	1,121,188	46,359	48,318
Canada plates.....Cwt.	325,895	633,843	42,435	97,674	751,705
Cast iron pipe..... "	17,084	19,421	26,690	27,983	47,407
Castings, malleable iron.... "	289	1,607	27,015	79,046	80,653
Chains $\frac{5}{16}$ in. dia. or over.. "	21,121	49,289	3,879	12,627	62,102
Chains, N. E. S..... "	1,955	7,012	1,280	6,299	13,854
Chrome steel..... "	.....	.....	941	6,218	6,218
Engines, locomotive..... No.	.....	.....	11	80,102	80,102
" fire..... "	1	4,008	9	12,995	17,003
" portable ..... "	.....	.....	58	15,640	15,640
" marine ..... "	.....	.....	.....	6,775	6,775
" other and boilers.. "	.....	2,015	... .	23,036	26,293
Ferro silicon spiegeleisen and ferro manganese..... Tons	650	12,786	2	25	12,811
Fish plates..... "	1,597	32,736	636	17,799	50,535
Forgings, iron and steel .... Lbs.	61,964	3,969	657,706	33,271	37,240
Hardware	.....	23,891	.....	261,817	291,841
Hoop and band, 8 in. and less in width, No. 18 guage and thinner..... Cwt.	7,716	11,406	14,685	20,465	32,274
Hoop iron, not exceeding ⅜ in. in width, 25 guage or thinner .....Cwt.	.....	.....	265	623	623
Ingots, steel, bloom and slabs Cwt.	15,566	18,847	8,771	9,288	31,847
Mining and smelting machinery, (not charged for duty)	.....	2,945	.....	189,210	193,098
Nails and spikes, cut ..... Lbs.	44,442	996	710,726	14,936	15,932
" " wrought... "	122,409	4,464	432,672	15,550	20,015
Pig, charcoal..... "	.....	.....	917	11,726	11,726
Pipe fittings ..... "	33,162	1,758	1,304,372	66,935	68,940
Plates, cast iron	.....	137	.....	8,840	9,033

SOME OF THE PRINCIPAL IMPORTS OF IRON AND STEEL, AND THEIR MANUFACTURE, DURING THE YEAR ENDED 30TH JUNE, 1896.—*Continued.*

IMPORTS.	From Great Britain.		From United States.		Value from All Sources.
	Quantity	Value.	Quantity	Value.	
Plates, plough.....Cwt.	19	108	5,071	29,464	29,572
" steel..... "	72,858	88,702	49,404	49,281	155,624
" thicker than No. 17 guage ..... "	20,359	31,050	12,227	25,721	57,462
Pumps, steam..... No.	10	2,462	203	36,775	39,237
Rails, iron and bars ..... Tons	3,366	64,223	3,286	61,115	125,338
" steel .....Cwt.	691,283	627,995	279,805	330,487	1,034,578
Railway switches and frogs . "	.....	.....	1,873	4,237	4,237
Rolls, chilled ..... "	217	561	1,575	4,596	5,157
Scrap, cast .....Tons	44	456	32	169	741
" wrought .....Cwt.	204,755	126,589	49,810	21,821	149,441
Steel, sheet, crucible, 11 to 16 guage, 2½ in. to 18 in. wide .....Cwt.	1,486	8,553	3,696	8,583	17,136
Steel for files... ..... "	32	187	2,874	9,903	10,090
" hammers ..... "	2,003	3,758	357	1,000	4,758
" saws ..... "	2,960	20,364	4,695	42,901	63,265
" skates..... "	1,179	5,603	1,205	4,582	10,185
Steel, rolled rods under ½ in. dia., or ½ in. sq.... .... "	.....	.....	1,357	4,040	4,040
Steel, No. 20 guage or thinner for corsets, clock springs, etc .Cwt.	1,700	5,896	851	7,719	14,877
Steel, No. 12 guage, or thinner ... .Cwt.	287	1,332	.....	.....	1,332
Steel sheets, Nos. 24 and 17 guage, 63 in. long and from 18 in. to 32 in. wide .....Cwt.	1,313	1,520	45	110	1,630
Steel tires, loco and car wheels "	433	2,046	1,875	7,675	32,697
Swedish rolled nail rods under ½ in. dia .....Cwt.	2,727	4,396	257	427	31,998
Swedish rolled rods, not less than 1¾c. per lb..... Cwt.	.....	.....	400	916	916
Tubes, boiler..... Ft.	658,309	38,291	1,158,135	74,998	127,432
" Lapwelded ..... "	.....	.....	752,450	39,560	40,832
" not welded..... "	249,454	29,186	607,979	68,099	97,285
" rolled..... "	1,360	3,061	364	808	3,869
" wrought over 2 in. in dia ..... "	110,658	8,376	1,731,410	285,826	295,390
" wrought, other..... Lbs.	1,688,055	36,077	3,768,325	94,400	174,450
Wire, galvanized, No. 6, 9, 12 and 14 guage, for fencing.....Cwt.	134	242	28,018	46,432	46,674
Wire, fencing, barbed..... Lbs.	.....	.....	440,298	8,854	8,854
" fencing, buckthorn... "	.....	.....	4,688	90	90
" covered .... "	30,418	7,680	462,663	34,053	41,990
" nails ..... "	27,024	831	241,512	8,177	9,008
" crucible cast steel .... "	352,097	16,579	57,551	8,608	26,456
" 13 and 14 guage ..... "	.....	.....	7,438	1,105	1,105
" ship's rigging..... . "	2,929	8,493	342	2,105	10,598
" rods under ⅜ in. dia .Cwt.	301,988	360,996	294,577	554,912	985,947
" rope ..... "	2,266	14,340	2,051	16,881	31,221
" other..... "	11,535	27,955	76,488	79,534	119,683

CANADA IRON FURNACE CO. Ltd.

Incorporated by Dominion charter under date of 29th November, 1889. Authorized Capital, $200,000. Increased 13th August, 1893, to $300,000.

Directors :

P. H. Griffin, Buffalo, N.Y., *President.*
G. E. Drummond, Montreal, | J. T. McCall, Montreal,
T. J. Drummond, Montreal, | Robert Schoot, Sheffield, Eng.
Hon. T. Guilford Smith, Buffalo, *Vice-President.*

Head Office: G. E. Drummond, Managing Director and Treasurer, Canada Life Building, St. James St., Montreal.

Works: John J. Drummond, M. E., General Supt., Radnor Forges, Que.

Formed to acquire and work mineral and wood lands in the Province of Quebec and elsewhere in the Dominion of Canada, and to manufacture special high class charcoal iron, similar to and competitive in quallty to that of Sweden.

Ore Deposits—The company at present owns an area of 100,000 acres of bog ore rights in the districts of Champlain, St. Maurice, Three Rivers, Vaudreuil, Joliette, St. Ambrose de Kildare, Point due Lac, Gentilly and Becancour, including the important deposits, (supposed to be the largest of like nature in the world) of lake ore in Lac-a-la-Tortue and Lac-au-Sables.

Lake ore is raised principally at Lac-a-la-Tortue, where a steam dredge of a capacity of 50 tons a day is employed. The deposits vary somewhat in analysis ; some of the bog ores used by the company being as low as .080 sulphur and .042 phosphorus.

The lake iron ore is found scattered over the bottom of the lake in an unctuous light colored mud made up of decayed vegetable matter. The ore does not appear to be found deeper than 12 or 18 in. below the surface of the bottom and is most plentiful in the upper parts of the mud. It occurs in the form of porous, flat rounded concretions, very irregular in color. The concretions vary from ¼ to 12 in. in diameter, and from ¼ to 2 in. in thickness, and closely resemble the dried excrement of cattle. The country surrounding Lac-a-la-Tortue is almost as flat, being a great sandy plain underlain by stratified clays, and covered in many places by extensive swamps. The underlying sands are highly impregnated with oxide of iron derived from the decomposition of the rocks of the neighborhood, which are highly charged with titaniferous iron ore. The iron in these sands is leached out by the action of acids formed, and fresh ore is being constantly formed, so much so that paying quantities of ore have been obtained from parts of the lake bottom which had been worked over thoroughly only a few years previously. As the lake is quite shallow

and the depth increases slowly from the shore, the whole bottom can be worked over by the dredge belonging to the company. The dredge is of the endless chain pattern, with four rows of buckets. The buckets bring up the ore mixed with large quanties of mud, which they empty into a long cylindrical sieve, having rows of water jets inside. The sieve is slowly rotated and the ore tumbling through is washed clean and discharged on scows moored alongside, and then towed to the railway at the west end of the lake. The company has lowered the level of the water several feet, exposing a wide margin of the deposit, which is worked by hand. This is shovelled into round iron sieves, and the ore washed out and made into heaps along the shore. The bog iron ore is found all over the country on either side of the St. Lawrence about Three Rivers, was formed in the same manner as those of Lac Tortue, and are often of great extent. It is found in patches near the surface of the soil, and varies in thickness from a few inches to several feet.

Furnace Stack (at Radnor Forges, Que.)—Height, 40 ft.; bosh, 8 ft. diameter; crucible, 5 ft. dia.; height of bosh line from hearth, 11 ft.; 4 tuyeres of 3 ½ in. dia.; crucible and bosh from mantle ring down is encased and protected with a Russell Wheel and Foundry Co. water jacket; furnace top is provided with a bell and hopper, capacity of which is twenty-five bushels.

Hot Blast Stove—This is of the pipe pattern with a combustion chamber below. Dimensions are: length, 24 ft.; height, 18 ft.; width, 9 ft. 6 in.; 68 openings between combustion chamber and pipe chamber above.

Steam Power—Consists of four steam boilers, each four ft. dia. by 25 ft. long, with two 18-inch flues; shells are of ⅜-inch plate and double rivetted; all boilers connected with a brick chimney 75 ft. high, and all are bricked separately, and arranged to fire with either wood or gas; gas connections are made so that boilers can be worked in batteries of two each or more, and one or two can be laid off for repairs or cleaning at any time.

Water Power—The River Au Lard, which flows through the property, affords the company a most valuable developed water power directly at the furnace. At this point there is a fall of 27 feet, and here the company use a "New America" wheel, affording power, and also keeping the water jackets constantly supplied. In addition to this fall there are three other separate falls situated within 300 yards of the furnace, giving an additional aggregate of 30 feet fall.

Blowing Engines—New Weimer blowing engine, size 16x48x30, set up on a solid stone foundation, which rests on a limestone bottom. This engine is provided with a patent water heater and a Scanlan patent wind receiver and heater, capable of raising the temperature of wind to about 200 degrees Fah. before entering the hot blast stove.

Auxiliary Blowing Engines—These are of the horizontal type, with two cylinders, each 40 inch diameter by 46 inch stroke, and are geared to be driven either by a horizontal steam engine of 14x20 inch cylinder or by water power. These engines are complete with their own wind receiver and pipes, and are so arranged that they can be

used in case of an accident to or a shut down of the Weimer engine. They deliver about 2,100 cubic feet of air per minute, with a pressure of 4½ pounds. The whole is set up in an engine house entirely separate from the Weimer, and is isolated from the latter and the boiler house.

Steam Pumps—One Blake Duplex pump, 12x7x12; one Holly boiler feed pump, one Niagara boiler feed pump, one Northey volume pump.

Force Pumps—One horizontal force pump, one double-acting plunger force pump. All the above steam and force pumps are so connected that they can be used either on the furnace water jackets, tuyers, for general fire purposes, or for boiler feed. All the suction pipes in connection with the new engine house are laid through a stone tunnel, which leads from engine house to river, and are always beyond the action of frost, and o arranged that alterations or repairs can be made at any time, as the tunnel is large enough to allow a man to pass or work.

Hoisting Power—This consists of a crane pattern double cylinder hoisting engine; size of cylinders, 8x10 inch. This engine is connected with two hoisting cages, having a lift of 15 feet from floor of weigh house to floor of top house.

Charcoal Kilns—Radnor forges battery consists of: Eight rectangular kilns, capacity, 55 cords each; seven beehive pattern kilns, capacity, 55 cords each. Grandes Piles battery consists of: Fourteen beehive pattern kilns, capacity, 55 cords each; Lac Au Sable, six beehive kilns, capacity, 50 cords each. Others in course of construction. Charcoal also made and supplied from pits in the Swedish manner. The buildings and real estate in connection with the entire plant is the property of the company in fee simple.

Wood Lands—Freehold and royalty rights on hardwood lands extending throughout the country north of Radnor Forges, and comprising some thousands of acres. The supply of wood is practically inexhaustible. The company's location for charcoal kilns at Grandes Piles securing to them the "key" of the St. Maurice River, and practical control of most valuable hardwood lands on either bank of the river for 70 miles of the navigable waters of the St. Maurice. The wood is principally hard maple, birch and beech. Assembly Bill No. 21, session 1895, Quebec Legislature, entitled: "An Act representing Colonization in certain parts of this Province, and for promoting the Mining Industry therein," reserves for the sole purposes of the Canada Iron Furnace Co., Ltd., 30,000 acres (part of a township) of hardwood lands, thus further guaranteeing the company a sure constant supply of fuel.

Limestone—The furnace is built upon one of the best limestone quarries in the Province of Quebec (the property of the company), and from this the necessary flux is quarried at a distance of not more than 60 yards from the furnace stack. The company is therefore assured of a constant supply of this necessary material at the minimum of cost.

Blue Clay—On the east side of the limestone quarry, and about 150 yards from the furnace, is a magnificent bed of blue clay, averaging about 12 feet in depth.

Sand—Directly in the rear of the furnace, and on the property, is a large bank of sand, suitable for use on the cast house floor.

OUTPUT IN 1893.

Total ore raised	18,848 tons. 2,000 lbs.
" charcoal	750,000 bushels.
" " iron man'f'd (value at furnace, $185,575)	7,422 $\frac{1430}{2000}$ tons.
" ore charged	16,700 tons.
" fuel charged	750,000 bushels.
" flux charged	1,680 tons.
" persons employed	600

OUTPUT IN 1894.

Total ore raised	20,648 tons (short).
" charcoal made	756,000 bushels.
" charcoal iron manufactured (value, $190,000)	7,900 tons.
" ore charged	17,500 tons.
" fuel charged	750,000 bushels.
" flux charged	1,750 tons.
" persons employed	600

OUTPUT IN 1895.

Total ore raised	16,203 net tons.
" charcoal made	654,361 bushels.
" charcoal iron man'f'd (value, $158,357.04)	6,598 $\frac{420}{2000}$ tons.
" flux charged	1,500 $\frac{417}{2000}$ tons.
" persons employed	600

OUTPUT IN 1896.

Total ore raised	24,713 net tons.
" charcoal made	630,000 bushels.
" limestone mined	2,415 net tons.
" charcoal iron made	5,602 net tons.
" charcoal consumed	557,400 bushels.
" ore consumed	13,725 net tons.
" limestone consumed	1,415 net tons.

COLONIAL IRON, COAL AND RAILWAY CO., Ltd.

Incorporated 1895. Authorized Capital, $1,000,000.

Directors:

R. G. Leckie. | W. E. Vroom. | R. M. Thompson. | R. G. E. Leckie.
B. F. Pearson. | A. G. Blair, Jr.

Head Office: R. G. Leckie, Managing Director, Newcastle, Grand Lake, N. B.

Formed for the purpose of acquiring and working coal areas in the Grand Lake district, Queen's County, New Brunswick, connecting the same with the city of Fredericton by a line of railway 30 miles in length, and establishing a blast furnace in the city of St. John, N. B. The property contains 40 square miles of coal areas, held under lease from the Government of New Brunswick, and 2,500 acres of freehold property not subject to royalty. The property is being opened up at date of report.

GLEN IRON MINING CO., Ltd.

Incorporated 1891. Authorized Capital, $50,000, in 500 shares of a value of $100.

Directors:

E. A. Nash, *President.*

J. A. Mara. | J. W. Mackay.
J. O. Grahame. | F. J. Fulton.

Head Office: Frederick J. Fulton, Manager, Kamloops, B. C.

Formed to prospect for, acquire and work mineral claims and coal lands; the erection of the necessary plant; the operation of railway and steamship service. The property owned by the company consists of 165 acres in sections 19 and 30, Township 20, Range 19, west of the 6th meridian, B. C. Small force employed. Since operations were begun in 1891, 5,000 tons raised. Ore worked is magnetite, and the works, which are situated contiguous to the line of the C. P. R., are supplied by a chute 300 ft. long and a Pickett aerial tramway of a length of 1,300 ft. The plant and buildings at date of last return were valued at $9,000. Estimated value of machinery and engine equipment at date, $5,000.

HAMILTON BLAST FURNACE CO., Ltd.

Incorporated under Ontario Statute, 1893. Authorised Capital, $1,000,000.

Directors:

J. H. Tilden, *President.*

J. Milne, *Vice-President.* | C. A. Birge. | G. Hope, | R. R. Morgan. | W. A. Woode. | A. E. Carpenter. | W. Southam,

Head Office and Works: E. Doud, Superintendent of Works, Hamilton, Ont.; R. Hobson, Secretary-Teasurer, Hamilton, Ont.

On 24th of July, 1894, the city of Hamilton passed a by-law granting a bonus of $75,000 for the establishment of iron smelting works in or immediately adjacent to the

city, and a further bonus of $60,000 for the erection of steel works. The provisions demanded that the plant be in operation by December 31st, 1894, capable of turning out at least 150 tons of pig iron per day, and that the sum of $400,000 shall have been expended on the plant (bonus to be arranged as follows) : The city agrees to purchase lands to the value of $35,000 for the erection of plant, and to give a cash bonus of $40,000 in city debentures payable on completion of plant.

The lands transferred to the company contains 75 acres, and immediately adjoin the city limits, on Burlington Bay, in the township of Barton. The company has the right to fill in and occupy the water front out to a line of 8 ft. of water. It is estimated that this will add at least 75 acres more to the property and will also make an excellent cinder dump.

On the 28th of October, 1893, the contract for the erection of a complete plant was given to the Philadelphia Engineering Company, of Philadelphia, Pa.

Work on the foundations was started in November, 1893, but was not completed until October, 1894. Cast house, walls, shell of furnace and stoves, were erected during the winter.

Extensions of time to complete plant were given to the company from 31st December, 1894, to 1st July, 1895, from then until October 1st, and again to 31st December of last year.

These extensions were necessitated by many unfortunate and unavoidable delays, also possibly by the extreme depression in the iron trade during 1894 and part of 1895. Work was again resumed during the summer of 1895 and pushed through to completion. The fires to dry out stack and stoves were lit on December 30th, 1895.

Furnace was blown in February, 1896, and is now making iron daily.

The following description will be of interest :

" Contract calls for a furnace and plant to be in all respects thoroughly good and substantial, with all modern improvements, capable of turning out 200 tons with 60% ore and Connellsville coke, constructed in all respects to obtain very best economy in fuel consumption and handling of materials."

Starting with the furnace, the foundations consist of :—(1) Limestone blocks laid in bridge bond, upper portion 5 ft. from hearth of well burned bricks, underneath hearth capped with hand-burned fire brick. Constructed on this the furnace is 75 ft. high, 16 ft. in the boshes, and 10 ft. hearth.

Seven cast iron columns support the upper portion of the furnace. Shell is 21 ft. in diameter at bottom, and 19 ft. at top ; thickness of plates ranges from $\frac{7}{16}$ to $\frac{5}{16}$ in. and all perpendicular seams are double-rivetted.

The furnace is built and lined with best hard-burned fire brick, made to proper sizes for different portions of furnace.

Top consists of regular plate platform and bridge to hoist tower, with guard rail 3 ft. 6 in. high.

Hopper is 11 ft. 6 in. in dia. and 3 ft. deep. Bell, 8 ft. 4 in., swung by two links attached to a lever with counterweight box, operated by a 12 in. steam cylinder, piston steam-cushioned top and bottom to guard against rough and careless handling of lever.

Downtake is 5 ft. in dia., lined with 3½ in. fire brick ; has one bleeder 20 ft. high and 2 ft. in dia., lined with 2½ in. brick.

Dustcatcher at foot of downtake is 12 ft. x 11 ft., provided with bottom and side cleaning and explosion doors.

The general piping, bustle, waste and feed water trough are very well arranged so as to allow quick work to be done in removing tuyeres, also any other repairs to and around bottom portion of furnace. Water fittings are all brass, inlets to tuyeres are fitted with brass elbows and ball unions. Feed water connections have 3-way cocks, with attachments for cleaning out and where hose may be connected for convenience in cooling furnace.

Bustle pipe 33 in. in dia., lined with 7 in. brick, connections for 6 tuyere pipes ; these pipes have a clear diameter of 8 in. when lined, and are provided with Gordon patent ball joints.

There are 6 bronze tuyeres and blocks. Blocks are 26½ in. long, 26¼ in. at butt and 19 in. at nose. Tuyeres are 6 in. Hearth jacket, steel, 1 in. thick, 6 ft. 4 in. high, and 16 ft. in dia. Strengthened at cinder arches.

Cinder arches 22 inches long, 13¼ in. at butt, and 11 in. at nose. Monkey is 4¼ in. long, 1¾ in. diameter. Hearth wall is 3 fi. thick and 4 ft. 4 in. high ; from this bosh wall is 27 in. thick and contains 5 complete circles, double thick 1 in. pipe cooling plates. There are also two coolers between each tuyere arch. Bosh is strengthened by 5 bands 8 in. x 1 in., with two 2½ in. expansion bolts at each joint.

Stock is raised to top in wrought-iron trestle lattice work hoist tower, supported on solid stone foundations, roof is covered with corrugated iron to bridge floor level. automatic safety cages, double 1 in. wire rope, operated by an automatic hoist engine, cylinders 12 x 12 in., built by Crane Mnfg. Co. Engine is placed in a brick building situated at foot of hoist tower.

Cast house is 50 ft. x 160 ft. from centre of furnace to end-wall and surrounds back of furnace in octagonal form. Foundations are solid limestone, walls red brick, roof corrugated iron and fits furnace casing, has ventilator running full length on apex of roof, is 6 ft. wide, 4 ft. high. Roof frame is strong enough to support two overhead trollies, running over pig beds to remove the iron. The hot blast arrangements consist of three stoves constructed after the Gordon Cowper Whitwell patents, a 3-pass stove which has been well recommended by all furnace masters who have had experience in their use.

They are capable of sustaining a regular blast temperature up to 1600° F. Each stove is 60 ft. x 19 ft., surmounted by a conical casing, topped by a 40 ft. chimney 36 in. diameter in the clear. A circular platform 24 in. wide with hand rail at convenient height surrounds top of each stove, these coming together form a bridge from stove to stove. Valves are all of the gate type (except air valve), and worked with rack and pinion.

Gas valves and hot blast valves are water cooled. In chimney valve the arrangement of valve and seat is such that the draft of the chimney induces passage of a strong current of air through them, protecting them from the heated gases.

These chimney valves are operated from the ground level by means of a ½ in. wire rope with the necessary mechanical connections.

Flues in checker work are 9 x 9 in. clear. To a certain extent the stoves are self-cleaning, as every time stoves are released, compressed air will carry out a certain amount of dust with it. As to arrangements for general cleaning, a small crane pivoted on a truck travels around platform at head of stoves; jib of crane is long enough to reach the cleaning doors on conical top. These six holes are 12 x 20 in. Chain on crane has scraping-weight at one end and counter-weight at other end. At bottom of stove are a set of steam blowers and three 20 in. cleaning doors. From dust catcher a 40 in. gas main runs across the face of the stoves; and from this main are three down pipes 30 in. diameter, ending in conical balanced explosion and cleaning doors; attached to these down pipes are 18 in. gas connections (provided with expansion and ball joints) which extend to gas valve of each stove.

Hot blast main is 60 ft. long, 40 in. diameter, and lined to 24 in.

Cold blast main is 24 in. in diameter, thickness of plate $\frac{5}{16}$ in.

Boilers built by Brownell & Co., Dayton, Ohio, are 12 in number, situated in a brick building 50 x 80 x 18 ft. to the square. 13½ in. brick wall (and corrugated iron roof) provided with the necessary doors, ventilating arrangements, etc. They are 59 in. by 24 ft., with five 12 ft. lap welded flues. Running across each pair of boilers is a 30 in. by 9 ft steam drum, connected with two 12 in. legs 3 ft. long. Each pair of boilers constitute a battery, and are set in one setting so that any two may be thrown out while the rest are working.

A down pipe from dust catcher goes to underground flue running across face of boilers. Flue has an area of 14 sq. ft., lined with 9 in. fire brick, sustained by retaining walls and provided with necessary cleaning and explosion doors.

Gas from flue enters burner of the Gordon, Strobel and Lareau patents, that are situated to one side of the front of boilers. There is only one firing arrangement for each pair of boilers.

Discharge main for gases from boilers runs along top and front. It is 48 in. in diameter, lined with 2 in. circular fire brick. At either end is a 60 in. connection to draft stack, lined in same manner. Draft stack is steel, brick lined, 125 ft. high and 7 ft. in the clear.

The blowing engines, manufactured by the Philadelphia Engineering Company, consist of two vertical poppet valve engines, steam cylinders 42 in., blast cylinders 84 in., with a common stroke of 60 in. They are independent of each other and can be operated singly or together. Each engine has two fly wheels 18 ft. in diameter. Total weight of each engine is 100 tons, horse power each, 1,200.

Foundations for engines are of hard burned brick, laid in hydraulic cement and flushed solid.

Engine house brick with corrugated iron roof. In the same building are the circulating and boiler feed pumps. Circulating pumps consist of two duplex steam pumps, steam cylinders 14 in., water 14 in., stroke 18 in. Water comes from lake through a 700 ft. line of cast iron pipe, well out in the lake and will be free from all

shore troubles. From pumps water is discharged into stand pipe 60 ft. high by 12 ft. ft. diameter, plates $\frac{5}{16}$ and $\frac{3}{16}$ in., well sustained by angle iron bracings. From here water is distributed to all parts of plant, and all waste water is returned to lake by special connections.

Boiler feed pumps (two in number), duplex steam plunger, steam cylinder 8 in., water plunger 5 in., stroke 10 in.; and they are so arranged that either can be taken out while the other is working. Feed water heater contains 500 sq. ft. solid drawn brass tubing.

Blacksmith shop and tool room in a brick building to the south of boiler house. Consists of one building, but solid wall separates tool room from shops.

Stock house is a good substantial building, but is already proving rather small and will have to be enlarged. It is 70 ft. span by 232 ft.; posts are 10x10 in., and 30 ft. high, strongly framed; main rafters are 8x8 in., trussed together and bound by iron bolts; 4 in. purlins 2 ft. 8 in. apart are fastened to rafters; sheeted with 1 in. board and all covered with corrugated iron.

Flooring is 2½ inches pine, laid on 5x5 in. stringers.

Charging scales are Fairbanks latest locked beams, four posts, with clear way to hoist tower. The track scales are Burrrow, Stewart & Milne's Imperial Standard. There are two railway trestles of easy grade in stock house for dun ping supplies.

The length of the company's tracks, including that connecting with the Grand Trunk Railway, is about two and a-half miles. During the past summer the company have erected a substantial dock about 1,200 ft. long, which is designed to carry machinery for discharging ore from vessels; also a brick office building, in which is provided accommodation for the Superintendent, Secretary-Treasurer, clerks, and chemist.

FURNACE OUTPUT IN 1896.

Total pig iron made	25,270	long tons.
" ore charged	43,900	"
" flux charged	8,469	"
" coke	30,217	"

Labor employed : An average of 120 men per week.

Total ore purchased in Canada by company	11,876	tons.
" purchased in United States	32,024	"
Total coke imported from United States	30,217	"

LONDONDERRY IRON CO. Ltd.

Incorporated in 1887, under special charter from the Dominion government. Capital Stock, Preferred, $400,000 ; Ordinary, $600,000.

Directors :

Lord Mount Stephen, Montreal.

Sir Charles Tennant, Glasgow.
A. S. McClelland, Glasgow.
J. J. Greenshields, London.
A. T. Paterson, Montreal.
John Turnbull, Montreal.
R. McD. Paterson, Montreal.

Head Office: 35 St. Francois Xavier Street, Montreal

Works Office: C. A. Meissner, General Manager, Londonderry, N.S.

Formed to acquire the property, mines, telegraph lines, machinery, plant, materials and other assets of the Steel Company of Canada, Limited, for the sum of $300,000 of preferential shares, and such amount, not exceeding $400,000 of ordinary shares, to be used in paying off the bond holders and ordinary creditors of that company, as may be necessary for that purpose, together with such undertaking for the payment of the indebtedness incurred by the liquidator of the said Steel Company of Canada and such minor arrangements as to details as may be finally agre d upon by the company, and the liquidator of the said Steel Company of Canada, with the authority of the proper court; and upon the completion of the arrangements for such acquisition, to issue as paid up-shares such preferred and ordinary shares as shall be required for the performance of the obligations to be assumed by the company; and as a means of providing for the expense of completing the said arrangements and of procuring the means of carrying out the same, of remunerating divers agents and others who have been engaged in negotiating the same in Canada and in England and generally of relieving the company from all liability in respect of any and all preliminary proceedings and arrangements, the company is authorized to make and use a further issue of paid-up ordinary shares, not exceeding in all the sum of $80,000; also to construct and operate such other roads and additions to the said railway, tramway and telegraph lines, in connection with the said mines and properties, or the rights they may have acquired, as are needed for their business; also to acquire, charter and operate vessels, steamers and other suitable craft for the transportation of the products of their business to ports in Canada, or to any foreign port or ports. Annual meeting held on the second Wednesday in February of each year, at which the affairs of the company are submitted to the 31st December preceding. The company's property covers about 36,000 acres freehold. Machinery, plant, etc., valued at $150,000. Mining has been carried on since 1849. A charcoal furnace was erected in 1853, which was in blast at short intervals for some years. At date the plant consists of:—

The blast furnace, calcining kilns, coke ovens. ore sheds and the various engines, boilers and pumps necessary to their operation.

2nd. The rolling mill, machine shop and foundry, with the various furnaces, tools and appliances.

3rd. Rail connections, tramways and rolling stock.

4th. The four ore mines, Cumberland, West, Old Mountain, and East mines.

5th. The right of way to and shipping facilities at Great Village.

6th. The Maccan coal areas.

7th. Various timber lands and other real estate.

1 Blast Furnace, etc.—In 1876, when the change was made from charcoal to coke as fuel, furnaces Nos. 1 and 2 were built on high land close to the main road

of the village ; these furnaces were 65 ft. in height, 16 ft. bosh and 14 ft. stock line, and 10 ft. dia. of hearth. They were built by the Truro firm of Brown & Pitblado from English plans. Three Cowper stoves were built at the same time, and both furnaces were put in blast. The furnace was relined early in 1895, and blown on March 10th of the same year. The present dimensions of No. 1 furnace are 75 ft. high, 14 ft. stock line, 18 ft. bosh and 9 ft. hearth ; the inside of the furnace is in comparatively good condition. No. 2 furnace has not been altered and has been idle for a number of years. It has been proposed to convert it into a Cowper stove at an expense of about $6,000 (mainly for fire brick.) The blowing engines are two in number, built by D. Adamson & Co., of Manchester, England, in 1876. They are of the condensing, vertical, direct inverted type, with the air cylinder and the crank and steam cylinder, the air pump being worked from the cross head. Diameter of steam cylinder, 34 in.; air cylinder, 72 in., with 60 in. stroke ; the valve is a single cylindrical one of Corliss type. These engines take steam at 55 pounds, and run from 22 to 30 revolutions, the larger amount of air being required for the company's brown ore. The blast is heated by the stoves to about 1,200° centigrade, and is furnished to the furnace at from 5 to 6 pounds pressure. Steam is supplied from 6 Galloway boilers, of Galloway's own manufacture, and have been in use since 1876 ; they are fired from the waste gases from the furnace, and just enough fine coal on the grates to fire the gas ; they are 7 ft. in dia. and 30 ft. long, and the whole six are set in one setting ; they are fed from the small Cameron pump. Water for the furnace is pumped by a duplex Worthington pump, with an auxiliary Cameron in case of break down.

The furnace charges are hoisted to the top in a double elevator, power being furnished by a fairly good hoisting engine of Londonderry make. The ore sheds are just behind the furnace, and are in fairly good repair, being capable of storing a four month's supply of ore, although large quantities of this are stored outside.

The coke ovens are 67 in number, of the ordinary bee-hive type, 11 ft. in diameter and are built in one battery. The time of coking with Drummond or Springhill slack is about 40 hours, and they furnish about 70 tons of furnace coke per day. They were built in 1876.

The rolling mill includes the rolling mill proper, the axle and car-wheel plant, the machine shop with pattern shop and foundry, and pipe foundry. In the rolling mill are three double and one single, and one scrap furnaces of standard form and dimension. These furnaces have been idle for about five years, but were repaired and started running about the 1st of January, 1895. One heating furnace for finished iron is also in a workable condition, and the two other heating furnaces can be put into good condition at small expense. There are three trains of rolls, a 16 in. puddle bar train, an 18 in. finished bar train, and a 9 in. train for small sections. The plant also contains a medium sized steam hammer for shingling the blooms, a rotary squeezer, a hot saw, two pairs of shears—one for puddle bar and one for smaller sizes, an ore crusher for the ore used for fettling, with a set of tumbles and an ordinary rock breaker. Steam for this plant is furnished by boilers heated by the waste gases from the puddling and heating furnaces.

The air blast for the furnace is furnished by a small engine and blower, with an almost new auxiliary vertical boiler. There are two or three other small engines in the mill, used for driving various parts of the machinery. The capacity is about 700 tons per month.

There are also rolls and complete fittings for a plate mill for rolling nail plate, and the company at one time did considerable work in this line.

In the machine shop are three long bed lathes swinging about 60 in., one wheel lathe, double-ended, which is good for 72 in. A good sized slotting machine, a boring mill for car wheels, a radial drill, a four ft. planer and a 2 ft. planer, a 10 in. railroad shaper, all of English make. There are also two lathes for turning rolls, a hydraulic wheel press and two small machine lathes of American make a pair of eight in. shears and a power punch complete the list of tools. Power is furnished by Rider cut-off automatic engine. In the foundry are two melting cupolas, a large one for the pipe shop, and a small one for use when the pipe shop is not run. The shafting is also in good shape ; a new main shaft has been purchased and will be put in place soon. There are also two furnaces for melting brass, two core ovens for ordinary work and two large ones for the pipe shop. There are three large hand cranes in the moulding shop, and three hand and one steam crane in the pipe shop. The capacity of the pipe shop is about 20 tons per day, and in the matter of flasks and patterns the plant is very well provided. The plant also includes a mixer, two hay rope machines, a heating furnace and kettle for tarring pipe and a hydraulic testing machine. There is a 50 x 80 storage building for patterns. Steam is furnished for this plant from two horizontal, single flue boilers, 5 ft. in dia., and 27 ft. long.

Railroads, Tramways and Rolling Stock—The company owns a broad gauge branch line, from the Londonderry station of the I. C. R., to the plant about three miles in length, with about a mile of sidings. All of the sidings and the broad gauge tracks around the furnaces and plant are provided with a third rail for the three-foot-six narrow guage road which connects the plant with the mines. There is a broad guage branch which connects East Mines station on the I. C. R. with East Mines, a distance of about four miles and a quarter. There is a narrow gauge line from the plant to the West Mines, 3 ft. 6 in. gauge and about 2½ miles long, with about half a mile of sidings at Old Mountain and Martin's Brook. From West Mines to Cumberland, a distance of a mile and three quarters, a 30 in. tramway laid with the pit rails is in use. There is also about two miles of tramway around East Mines.

Locomotives—The company owns a broad guage Baldwin locomotive, built in 1879, with 17x24 in. cylinder, and 48 in. drivers. There is also a broad guage Scotch locomotive, built about 1876, with 14x24 in. cylinders and 48 in. drivers. The company also own two narrow guage locomotives, a Baldwin and a Scotch locomotive. For rolling stock there are eight platform cars for handling pig iron, and 17 coke cars, all of the 30 ft. standard pattern. The ore cars, of which there are about 40, are all narrow guage, and are of the side dumping type.

Iron Mines—The iron mines are all in the same belt or seam, which runs in an east and west direction about half a mile north of the base line road, which runs through the centre of the village. The company owns about 12 miles of this vein,

which varies in width from five or six hundred feet from the widest portion down to zero in others. The general dip of the vein is from 75 to 80 degrees south. The mine has been worked in various places along the whole length, the principal section being named from the brooks, which flow across the outcrop at the principal points of working. From these brooks the various levels have been driven in to the seams in a general east and west direction, while in some places open quarries have been used where the outcrop is on the summit of the hill. In most cases the outcrop may be considered as the top of the second set of foot hills north of Minas Basin ; the third range of hills dividing the isthmus into northern and southern slopes. The main workings are the Cumberland mines at Cumberland Brook, four miles west of the village ; West mines at Martin's Brook, 2½ miles west from the village ; Old Mountain Mines on the top of west bank of the ravine at the village ; and East mines at Slack's, Coreys, Weatherbys and Pine Brook, about seven miles east of the village. There are about 100 adits in all of these localities, and at least 30 open quarries, from which ore has been taken. The main body of ore is a limonite, which yields as high as 57 per cent. of metallic iron, and will probably average 53 or 54 per cent. This is mixed in greater or less degree with the ochre, or paint as they call it here. This reduces the yield of iron at times materially. Spathic ores are found to some little extent, and run about 40 per cent. in metallic iron. Formerly these ores were calcined in the calcining furnaces, but to-day they are charged into the furnace direct and partially supply the place of limestone fluxes. A great deal of specular ore of varying compositions is also obtained. This specular is generally found in small veins in spathic ore, but frequently large pocket shaped deposits are struck, notably at Corey's Brook in the East mines. Ankerite is found in large quantities at all of the mines and is frequently used as a limestone flux.

Cumberland Mines—These mines have been open about sixteen or eighteen years. At present only two levels are worked, No. 7, intermediate on the east side of the brook, and No. 12 on the west side. Nos. 7 and 8 are under water, and the two or three levels above No. 7 are crushed. At present the mine is being worked on a contract. There is known to be good bodies of ore in all of these levels, and when money can be obtained to keep them open and clear of water much more can be expected of this mine.

West Mines—At least five main levels have been worked here, but the main part of the working, including about 300 feet of the hoisting shaft, are under water, and a good deal of it probably crushed, as very little work has been done there for the last five years. Some of the best ore the company has ever worked has come from these mines. The old miners that worked there formerly say that when the crush took place there was probably three years' ore in sight.

Old Mountain Mines—Here the vein of ore runs largely to ankerite, with veins of white ore and brown hematite intermingling. A great deal of ochre is also met with. The company works this mine on the ordinary system, paying the men various prices for the ore as determined by the analysis. An inclined plane worked on the gravity system takes the cars from the mouth of the main entrance down to the railroad level, in the bed of the canon. This whole section, covering probably ¾ of a

mile on the top of the hill, has been duly gone over, searching for ore, and a great many tons have been taken off the top. There are a number of open ankerite quarries of considerable extent also.

The first working at East mines was in the neighborhood of Coreys Brook. Early a tramway was built from Corey's Brook to Slack's Brook and beyond nearly to Folly river, where an outcrop of the vein occurs. These workings from Coreys Brook west to Folly river have been nearly all worked out and the entries and adits allowed to crush, very little high grade ore being obtained. At Corey's Brook the big ankerite quarry is located. This has not been worked for a long time, as enough ankerite has been obtained mixed with good ore in the other workings. Here, also, was the largest pocket shaped deposit of specular ore, which was about 40 ft. thick, and covered a space of 300 ft. by 50 or 60. At Corey's Brook is situated the end of the East mines branch railway, and from here the tramway lines to Weatherby's Brook and the ankerite quarry radiate. A gravity inclined plain runs from the mouth of Corey's Brook to this terminus.

At Weatherby's Brook is the best body of ore at present worked. The mine consists of an adit about half a mile long, at a level about 100 ft. higher than the terminus of the branch railway. From this level two shafts sloping at an angle of 75 ft. are sunk along the bed wall of the vein to the other level about 70 ft. below. At the foot of these shafts four short levels have been started, and the men are at work on the brown ore, which seems to grow better as they get down. Two upright boilers which are placed underground on the adit level, furnish the steam for the pump and the hoisting engine, and the old workings above the level furnish an exit for the smoke. This brown ore is the best which the company mines now, and is used for fettling in the puddling furnaces. At Totten Hill, about ½ mile further east, there are open quarries of white ore and ankerite. The hanging wall of the vein in almost every case is ankerite. The company uses in the furnaces generally a mixture of about half Torbrook ore and half of their own ore, the Torbrook ore containing about 1½ per cent. phosphorous. The company owns a limestone quarry at Brookfield, about 8 miles from Truro, but this has not been worked.

The company owns a very fair wharf site at Great Village and Cobequid Bay, and a survey for a line of railway connecting Londonderry with that place has been made and some little grading done. The company owns the right of way. The company also owns a wagon road along the line of the river.

Maccan Coal Properties—This property consists of about 2,200 acres of land, 52 miles from Londonderry, and within easy distance of Amherst. The seam of coal which has been worked consists of about 6 ft. of bottom coal, 3 in. of slate, and about 12 in. of top coal. There are 4 or 5 thin unworked seams lying above this on the company's property. They do not increase to a workable thickness; the coal lies at an angle of about 50 degrees. It has been worked at a number of places along the outcrop. The seam was not fiery at all, very little gas being encountered and naked lights were used. About 50,000 tons of coal have been taken out.

Other Property—The company owns a great deal of land in the neighborhood of Londonderry, some of which contains hardwood lumber. Around the plant and the

various mines are a collection of company houses, probably from 100 to 150 in all, some of which are in good repair.

FURNACE OUTPUT IN 1896.

	Long tons.	Value at furnace.
Pig iron made	10,497	$136,197
Ore charged	27,053	54,110
Flux charged	8,882	8,654
Raw coal	1,256	2,288
Coke	18,290	48,935
Total ore raised	29,327	.....
" limestone mined	9,062	.....

" employees at furnace, 75.

ROLLING MILLS AND FORGES.

3 re-heating furnaces, 3 train rolls.	Man't'd in 1896. Long tons.	Value at mill.
Iron: all sorts made	361	$13,040
Puddled bars consumed at works ..... Scrap and other iron consumed at works	414	10,328
Total fuel consumed	452	879

Average men employed, 50.

IRON AND STEEL WORKS.

8 double pud. furnaces in fire, 1 single " "	Quantity in 1896. Long Tons.	Value at works.
Production of iron	3,800	$94,358
Consumption of pig	4,198	50,422
Consumption of fettling ore	2,215	5,933
Consumption of fuel	6,285	12,808

Average persons employed, 60.

McDOUGALL & CO.

Estate late John McDougall.
Robert Cowans, Montreal.

Head Office: Imperial Building, Place d'Armes Square, Montreal.
Works: Drummondville, Que.

Own an extensive area of bog iron ore territory, and operate a charcoal furnace plant, at Drummondville, Que. Two furnace stacks, both built of stone, 35 ft. high; capacity, about six tons per day each. At present the whole of the output is used in the manufacture of car wheels at the company's works in Montreal.

NOVA SCOTIA STEEL CO., Ltd.

Reconstructed 1895, being an amalgamation of the New Glasgow Iron, Coal and Railway Co., Ltd., and the Nova Scotia Steel and Forge Co., Ltd. Authorized Capital, $5,000,000 in shares of $100; issued, $2,030,000.

Directors:

John F. Stairs, Halifax. *President.*

Graham Fraser, *Vice-President.*
Adam Burns, Halifax.
John McNab, Halifax.
J. W. Allison, Halifax.
J. D. McGregor, New Glasgow.
E. F. McKay, New Glasgow.
Frank Ross, Quebec.
George Stairs, Halifax.

Head Office and Works: T. Cantley, Secretary, New Glasgow, N.S.
Mine Manager: R. E. Chambers, M.E.

Formed to take over the business, franchises, undertaking, property rights, privileges, and assets of the Nova Scotia Steel and Forge Co., Ltd., and the New Glasgow Iron, Coal and Railway Co., Ltd.

Blast Furnace at Ferrona, connected with the mines, limestone quarries and Intercolonial Railway by company's own railway, at present completed for a distance of 13 miles. It is of modern design and fitted up with the most approved appliances. The clear lines inside the brick work are: Height, 65 ft; bosh diameter, 15 ft.; crucible diameter, 9 ft. 6 in. There are eight tuyeres and two cinder notches. The casting house is 50 ft. by 153 ft., constructed of iron. The furnace has two down-comers (gas flues), one carrying gas to the hot blast stoves, the other leading to the boilers. There are three hot blast stoves, of the 3-pass Massick and Crook type, each stove being 16 ft. 6 in. in diameter, inside of the shell, and 60 ft. in height. There is also a chimney on each stove 35 ft. high. Each stove is lined with 160,000 fire bricks. The blast is produced by two blowing engines, each weighing about 90 tons, having steam cylinders 36 in. in diameter, air cylinders 84 in. in diameter, and a 4 ft. stroke. The engines are placed in a brick building designed for strength, and 35 by 60 ft. Steam is generated in a battery of eight boilers, set in pairs, tubular, and designed to carry a pressure of 100 lbs. Each boiler is 6 ft. in. diameter, 20 ft. long, and contains 52 tubes each 4½ in. in diameter. The fuel used is waste gas from the furnace, the draft being produced by an iron chimney 125 ft. high, and 7 ft. 6 in. in diameter, and lined with fire brick 4 in. in thickness. The water supply is pumped from the East River into a stand pipe 10 ft. in diameter and 80 ft. high. There is a large ore shed, hoists, scales, etc.

Coal washing plant was put into successful operation in May, 1892, and is the first of its kind erected in Canada. The coal is elevated, screened, and the large coal crushed. The resulting fine coal is separated into three sizes: Nothing to one-eighth

inch, one-eighth to one-quarter, one-quarter to three-eighths. The coal is washed on two compartment feldspar jigs arranged with variable stroke. The washed coal is removed by elevation to a storage tower, and the refuse led to a convenient dumping place. The water used is raised by a centrifugal pump and after performing its round of work returns again to the pump. The entire plant works automatically, requiring the services of three men.

The coal washed contains from 17 to 35 per cent. of ash, besides 2½ per cent. of sulphur. The washed coal contains on the average 10 per cent. of ash, or 1 per cent. more than the fixed ash, 9 per cent. of the coal. This is a remarkably good showing, and seldom surpassed. The fixed ash, of course, cannot be reduced. The sulphur is reduced by washing to 1.35 per cent., that being partially organic and partially fixed with lime or alumina. The total capacity of the plant is 300 tons of washed coal in ten hours. The average cost of washing, winter and summer, is put at 7½ cents.

Coking Plant.—This is situated near the coal washer, and contains 54 retort coke ovens of the Bernard system (improved Copée), of the following dimensions: Length, 33 ft.; height, 6 ft. 6 in. (under roof); medium width, 23½ inches. Each oven is charged with about 7 tons of washed coal (all below ⅜ in. mesh), every 40 or 48 hours; the 54 ovens produce every 24 hours between 115 and 120 tons of first-class large coke, which is all used in the blast furnace of the company. The coal used yields 73 or 74 per cent. of large coke right along; the same coal only yields 60 per cent. max. in the bee-hive oven. Each oven can supply 130 to 150 square ft. of boiler surface for steam raising if desired. Each two ovens work together, and for this reason the ovens are charged alternately; one day the ovens 1, 3, 5, 7, 9, etc., uneven numbers are pushed; the next day the even numbers, 2, 4, etc., are discharged; this arrangement makes it possible to work a hot and cold oven together, utilizing the surplus heat of the hot oven to heat the cold (freshly charged) oven. After the process of coking is finished the doors at both ends of the respective ovens are lifted by means of windlasses, and the ram now pushes the whole cake of coke out of the retort, landing it clear of the ovens on the discharge side, where it is water-cooled. As soon as the coke is pushed out by the ram of the coke-pushing machine, the oven doors are reclosed and sealed air-tight with ordinary clay; the coal to be charged is now dumped into the oven through the charging holes 15, 15, 15, and levelled in the usual way.

The main advantages of these retort ovens, without saving of tar and ammonia, over the bee-hive oven, are as follows:—

1st. A larger yield, 12 to 15 per cent. at least.

2nd. Considerable lower cost of coke making (labor—expenses.)

3rd. All coke produced is large and strong, there is less than 3 per cent. of fine coke (braise.)

4th. Larger production per oven.

5th. Fewer repairs, etc.

6th. Owing to the high temperature carried and to the high and narrow column of coal (6 ft.) inferior coking coals can be successfully coked, also a mixture of coking and non-coking coal.

Ore Deposits—The ore occurs at the junction of the carboniferous and silurian formations, in bodies of large size, which are opened at different points in the East river, extending over a distance of five miles. The ore is won by shafts or inclines according as the pitch of the ore is more or less inclined. During the past year the ore used has come principally from the McDonald and Grant mines.

The amount of ore mined is about 4,000 tons per month, including both brown and red hematites.

During 1894 this company acquired, and now operates, a mine of iron on Bell Island, Conception Bay, Newfoundland.

Ore Washing Plant—The principal impurity in the ore is clay, which is easily and cheaply separated by washing. The washer used is a section of a conical revolving drum with inclined blades or fins on the inside, which work the ore from the large to the small end ; while the water (from a Cameron pump) enters at the small end of the drum, washing the clay from the ore which it meets in its descent, and discharging it in spouts, which lead to the settling pond. The ore is discharged from the small end of the drum into a bin, and from thence into the cars.

FURNACE OUTPUT TO 31ST DECEMBER, 1896.

	Gross Tons.
Pig Iron made	17,891
Ore charged	31,479
Fuel charged	36,527
Flux charged	15,015

MINES OUTPUT, 1896.

	Gross Tons.
Iron ore output mined by company in Canada	11,235
" output purchased in Canada	14,671
" " " Europe	3,224
Limestone mined	14,985

LABOR EMPLOYED.

	Persons.
In ore production in Canada	145
" Furnace and Works	225
" Steel Works	450

Steel Works at New Glasgow—The plant comprises three Siemens melting furnaces ; two of these have a capacity of 20 tons each and the other a capacity of 35 tons. These three melting furnaces are served by one of Chaplin's pat. 3-cylinder 50 ton steam cranes, having a clear span of 50 ft. with traverse, longitudinal, and hoisting motions, and will lift 50 gross tons ; three gas heating furnaces ; five reverberatory heating furnaces ; 26 in. reversing cogging mill, with train of live rolls and hydraulic ingot manipulators ; heavy vertical hot billet shears, with live rolls; one 20 in. plate mill ; one 16 in. bar mill ; one 12 in. bar mill ; one 9 in. guide mill ; 12

pair shears, 40 tons and smaller; one 5-ton steam hammer, with 15 ton hydraulic crane; four smaller steam hammers; machine shop, 175 ft. x 75 ft., with 30 ton travelling crane commanding whole shop, equipped with 30 in. slotter, 6 drills (one a 9 ft. radial, 5 in. spindle), 9 lathes, one of which will take in 50 in. over carriage, and 8 ft. x 10 ft. in the gap, will take 37 ft. between centres; also 6 large gap and other lathes, small shapers, etc. Power is supplied by some 50 steam and 10 hydraulic cylinders. Entire works are lighted by arc and incandescent light plant. Output, 150 tons of steel ingots per day, all of which is worked up into bars, sheets, axles and other forgings. Over 100,000 axles or this company's make have been supplied to Canadian railways.

Director's Report.

The following is excerpted from the annual report under date of 12th August, 1896:—

"Your Directors submit herewith their Second Annual Report, General Statement of Assets and Liabilities, and Abstracts of Profit and Loss and Reserve Accounts, for the year ended June 30th, 1896.

"The improvement in prices referred to by the directors in their last report was sustained until about the end of December last, but they regret that since that time prices in the United States have been much weaker, and in order to secure the business necessary to keep the works fully employed, lower prices had to he accepted. Owing to the large increase of tonnage, the results of the year's operations were considerably better than for the previous year.

"The demand for foundry pig iron during the year has been fairly good. The competition from the United States has been very severe; prices of some makes of pig iron having receded to almost the point touched during the severe depression of eighteen months ago. This was especially felt in our western market.

"Though the prices of iron and the prospects in the United States are still unsatisfactory, the outlook in England and the Continent is better than it has been for years, and your directors hope an improvement in the United States may not be long deferred.

"In view, however, of the uncertainty produced by overproduction and the silver agitation in the States, and the importance of the company maintaining a strong financial position, your directors do not recommend that any dividend be declared at present.

"Your directors are pleased to report that the anticipated advantages of amalgamation have been fully realized. The supply of pig iron being entirely under their own control enables them to reduce the cost of finished steel, and thereby secure orders which otherwise would have gone past them. This is shown by the increase in the sales of the steel department.

"It will be noticed that of the bond issue authorized by the company but $94,000 have been disposed of; your directors have made no special effort to push their sale.

The gross profits of the company for the year ended June 30th, 1896, amount to		$ 111,960 61
Less interest on bonds, floating debt, etc.		39,480 10
		$72,480 51
To this must be added the balance of Profit and Loss Account on June 30th, 1895		91,482 22
		$163,962 73
Half yearly dividends of 4 per cent. each on the preference stock were declared by the directors and paid on the 10th September, 1895. and 10th March, 1896		82,400 00
Leaving at the credit of the Profit and Loss Account on the 30th June, 1896		81,562 73
Your directors recommend that the amount be distributed as follows :—		
Reserve for bad debts	$ 2,500 00	
Furnace renewals	10,000 00	
Depreciation	20,000 00	
		32,500 00
Leaving a balance to be carried forward to the credit of the Profit and Loss Account		$49,062 73

PICTOU CHARCOAL IRON CO., Ltd.

Incorporated under the laws of Nova Scotia, in November, 1891. Authorized Capital, $200,000, divided into 2,000 shares of $100 each.

Directors:

M. H. Fitzpatrick, New Glasgow, N.S., *President.*

Jas. D. McGregor, New Glasgow. | W. B. Moore, New Glasgow.
A. C. McDonald, Pictou. | Alf. Markham, St. John, N.B.

Head Office: A. C. McDonald, Sec.-Treas., Pictou, N.S.

Works: E. A. Sjostedt, M.E., General Manager, Bridgeville, N.S.

Formed to manufacture charcoal pig iron on the East river of Pictou, Pictou county, Nova Scotia, and to transact any other business in connection therewith, etc. The company controls a valuable deposit of brown hematite on the Grant farm at Bridgeville ; also some 8,500 acres of heavy old growth hardwood timber land, situate within fifteen miles of furnace site.

The buildings consist of offices, stables and store houses, carpenter and blacksmith shops, a coal shed (with a capacity of 40,000 bushels), casting house, stock house, engine house and puddling-mill. The shops and furnace buildings are all covered, roof and sides, with corrugated iron, painted on both sides with mineral paint. The working plant proper consists of the following structures : The furnace stack is 50 ft. high with an 11 ft. bosh and 7 ft. diameter under the bell. The conventional iron shell has been dispensed with and substituted by a crinoline strapping and red brick shell. This, together with the 15 in. fire brick lining, is supported by six cast iron columns, and the bosh is surrounded by a boiler plate mantel, and the hearth by a water-cooling cast iron jacket. The tuyeres, 6 in number, are of bronze and set in water-coil-breasts. The down-comer has a diameter of 36 in., and the bustle pipe 15 in. The top of the furnace is provided with a Weimer patent friction winch and gas seal for facilitating an even distribution of the stock, and to prevent waste of gas. The hot blast is a modified Cooper-Durham cast iron stove, with 30 V-pipes, built in two sections and provided with two combustion chambers side by side, and so arranged that the cold inlet and the outlet of the heated blast, as well as the two combustion chambers, are placed in the same end of the stove. This arrangement was successfully adopted by the manager some years ago at Katahdin Iron Works Mine. Besides economizing space and blast and gas connections, it facilitates maintaining the blast at a high temperature with a small amount of fuel gas, the 2,000 ft. of heating surface sufficing to keep the 3,000 cubic ft. of air per minute (engine measure) up to 750° to 800° F. The boilers are 4 in number (30 ft. x 36 in.) made of best $\frac{5}{16}$ Dalziel steel, and built in sets of two, with separate draft stacks, and independent steam and water connections, and provided with gas valves and combustion chambers similar to those in the hot blast, besides separate grates for wood or coal in case of shortage of gas. The blowing engine consists of two horizontal blowing cylinders of 5 ft. diameter and 5 ft. stroke, and a pair of horizontal steam engines, 18 in. x 36 in.—each capable of performing the work in case of necessity.

The elevator comprises a double Whitney hoisting machine and two Wood & Co.'s safety cages. These, as well as the limestone breaker (a Forster "crusher and pulverizer"), are run by belt from a horizontal steam engine of about 15 h.p. capacity. For the handling and weighing of the stock and the pig iron, Weimer patent steel charging barrows and Riehlé's furnace charging and pig metal scales are used.

Water supply has been provided for by building a 25 ft. dam on the Mill brook, from which the water is conducted 700 ft. through 3 in. wooden pipes to the furnace, besides which a reservoir is built (at an elevation of 75 ft. above the foundation level of the furnace) for collecting the spring water from the hills above, as well as the water pumped from the river; in case of lack of water from the above mentioned sources, a Northey duplex steam pump (7½ in. s. c. x 4½ in. w. c. x 10 in. st.), is performing this work, and a series of iron pipes are laid to the reservoir, and to different parts of the work, and fitted with valves, hydrants and hose connections in case of fire.

For the carbonization of the wood, 22 brick kilns have been erected at different places. Six of these are of the bee-hive type, each holding 50 cords of wood, and

capable of carbonizing 1,200 cords per annum, which will produce 5,000 bushels of coal. The balance are of the Plattsburg (conical) type, each holding about 25 cords each, with an annual capacity of 600 cords of wood, or 2,500 bushels of coal. The present coaling capacity is, therefore, about 600,000 bushels per annum, requiring about 15,000 cords of wood, which is the estimated requirement for producing 5,000 tons of pig iron a year.

The wood used for the charcoal making is principally yellow birch, also beech and maple, and is hauled by teams, wintertime, to all the kilns, except to those at Sunny Brae, where a pole road about 2½ miles long has been built, and on which it is taken during the dry summer season from the woods to the kilns by a locomotive with a 6x3 ft. upright tubular boiler and double 6x8 in. steam cylinders. With this engine a load of 4 cars is hauled, each car holding 2 cords of wood; and a round trip, including loading and unloading, is made in a little over 2 hours. The transportation of the charcoal to the furnace is done partly by rail (from Sunny Brae), partly by teams.

The iron ores on the north side of the East river of Pictou have been opened up in several places between Springville and Sunny Brae and are at present worked by the company in two places on the Grant farm at Bridgeville. They are contact deposits between the carboniferous limestones and the upper silurian measures, and consist of brown hematites, "residual precipitates formed from the disintegration of the older Silurian rocks above, more or less mixed with pyrolusite in form of nodules and masses, mostly in the hanging wall, but also as veins or crystals in the deposits themselves." On the south side of the river there are the Weaver and Watson specular ores, but these have as yet not been worked.

The ore deposits worked by the company being situated but a few hundred feet from the furnace, on a hillside on an elevation of about 100 feet above the same, the mining and handling of the ore is rendered especially easy. Two tunnels have been driven, one on the east and one on the west side, back of the furnace. The latter, or No. 1 tunnel, goes through a seam or vein of gravel ore easily mined, and 10 to 15 ft. in width. After being driven in about 300 ft. a slope was driven up through the ore, and an incline of about 45° south-west, to the surface 60 ft. above, which showed up a large body of ore, in some places 18 ft. wide.

The ore in No. 2 tunnel is of an entirely different character, being fibrous and compact, and requiring blasting. It is besides richer in metallic iron, nearly free from manganese. This ore was first worked by an open cut on the top of the hill, as it displayed a remarkable deposit of solid limonite, yielding 58 per cent. metallic iron, and three to four thousand tons were removed. About 150 ft. below this cut the company has now driven a tunnel about 600 ft. in this limestone to the same kind of ore, besides a 100 ft. air shaft and different levels, all in ore from 10 to 15 ft. wide.

The following analyses will serve to give an intelligent idea of the above mentioned ores;

	Gravel ore from No. 1 Tunnel.			Gravel ore from No. 2 Tunnel.	
Insoluble matter	12.80	6.75	....	8.58	5.58
Metallic iron	45.02	53.41	....	54.83	56.57
Metallic manganese	1.56	1.88	....	0.20	0.20
Comb water	9.45	11.02	....	10.00	10.90
Sulphur	0.05	0.04	....	0.41	0.09
Phosphorous	0.12	0.02	....	0.03	0.21

The variation in manganese and sulphur is, however, even more marked than the above figures indicate, as crystals of pyrolusite and barite are met with here and there among the ore, without any regularity or warning. Before using it in the furnace, part of the ore is treated in a Newbold & Son washer (a revolving cone), but part of it is clean enough to be used or shipped from the mine direct to furnace.

The limestone used for flux is quarried at Springville, and is hauled (3 miles) to furnace, costing about 85 cents per gross ton delivered. It contains about 94 per cent. carbonate of lime; 2.5 per cent. carbonate of magnesia; 2.0 per cent. insoluble matter.

OUTPUT IN 1895-96.

The quantity of hematite mined in 1895 amounted to 8,506 tons; and in the year ending October 1st, 1896, 12,099 gross tons.

During the winter of 1896 a puddle mill was added to the plant—consisting of two puddling furnaces, a steam hammer (with cylinder 16 in. diameter and 27 in. stroke), an 18 in. roll train, two tubular boilers (16 ft. long, 5 ft. diameter, and with 52 4 in. tubes), steam engine with 18 in. steam cylinder and 3 ft. stroke, and with an 18 ton fly wheel for the manufacturing of billets and muck bars.

TORBROOK IRON CO., Ltd.

Incorporated by Act of the Legislature of Nova Scotia, assented to 19th May, 1891. Authorized Capital, $100,000 in 10,000 shares of $10, with power to increase the same to $250,000.

Directors:

Hon. Alexander Macfarlane, Wallace, N.S., *President.*

Chas. E. Stayner, Halifax, N.S. | R. G. Leckie, Torbrook, N.S.
J. Medley Townshend, Amherst, N.S. | R. G. E. Leckie, Torbrook, N.S.

Head Office: J. E. Leckie, Manager, Torbrook, N. S.

The company holds in fee simple and under lease an area containing 2,000 acres of mineral land, traversed by beds of iron ore, in Annapolis County, Province of Nova Scotia.

Operates the Torbrook hematite mines at Torbrook; connected by branch line with the Windsor and Annapolis railway at Wilmot station.

OUTPUT.

1891	10,000 Tons.
1892	18,000 "
1893	30,000 "
1894 (idle two months)	21,590 "
1895	35,073 Long Tons.
1896 (idle for 8 months)	8,797 "

The machinery equipment comprises :—

Boilers —Three 75 h.p., and one 20 h.p.

Compressors—One Ingersoll-Sergeant, four drill; and one Rand, five drill capacity.

Hoisting engines—Four drum (each 2 ft. 2 in.) friction hoisting plant; one single drum winding engine.

Pumps—Three Blake, 2 in. water col., discharging 52 gals per min.; one Worthington duplex, 6 x 4 x 6, discharging 90 gals. per min.; two Cameron, 5 in. water col.

Air drills—Six Rand and one Ingersoll.

Forty-three persons employed in 1896.

GOLD MINING INDUSTRIES.

Gold, which ranks next to coal among the mineral products, is at present principally obtained in the provinces of British Columbia, Ontario and Nova Scotia.

Nova Scotia.*

The first discovery of Gold in Nova Scotia was made at Tangier in 1860; but as an industry gold mining may be said to date from 1862, when most of the older districts were proclaimed by the Government, a "Chief Gold Commissioner" was appointed, and laws were framed governing the acquisition and working of gold-bearing lands.

During that year several quartz-crushing mills (some thirty in number) were built, of types varying from the arrastra, and its offspring, the Chilian mill, to the stamp batteries of that date. No royalties, however, were collected by the government until the year following.

From the year 1862 dates also the wild excitement consequent upon the inception of mining work in many and distant sections of the province; an excitement which was in part due to the richness of the gold streaks which were found cropping to the surface; in part due to the schemes of both English and American speculators, and also in part due to the greatly exaggerated idea of the value of the fields thus discovered.

This excitement culminated in 1867 and 1868, when the inevitable leaner or poorer portions of the lodes began to predominate, and when shareholders began to realize that their extravagant expectations of dividends were doomed to disappointment.

The reaction was natural and inevitable when the mines were managed by men not trained to mining, and entirely unfamiliar with the business. Large losses occurred in milling, and the peculations of the workmen at that time were not inconsiderable. Thus, when these lower grade spots were encountered profits temporarily ceased, there being no development of the veins ahead, and consequently no body of reserves to fall back upon, and, but too often, no treasury fund to pay for development work. Of course, primarily the cause of all this was the incapacity and inexperience of the then managing men, but another reason contributed largely to the same effect, and that was the idea (promulgated, it is said, by a Mr. Thomas Belt) that no lode would be found to be auriferous below depths varying from 100 to 200 feet. This notion seems to have been borrowed or transplanted from Australia, where the same idea was prevalent from 1865 to 1875. The notion is so absurd as to need no refutation.

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*By Mr. John E. Hardman, M.E., S.B., Montreal.

There followed a period of general depression, and amongst capitalists, a great distrust of Nova Scotia gold properties. From 1871 to 1882 the production and the number of men employed fell off greatly, in some years to the extent of more than one half. During this period of ten years the production was maintained chiefly by the discovery of new districts and the finding of one or two rich veins in some of the older districts. Unfortunately, however, experience had not taught wisdom, and these later discoveries were worked in the same systemless manner that the earlier mines had been, and of course with the same results. No mine being opened in a systematic manner, so soon as its rich quartz was all extracted from the surface workings it was declared "worked out" and was abandoned.

In 1883 and 1884, however, several attempts were made by men of experience and training in other countries to re-open and work some mines which had been idle and filled with water for ten or fifteen years. These attempts were successful and from the year 1885 dates a new era, or epoch, in the gold mining industry of Nova Scotia. In that year the annual production exceeded the average annual production by 7,000 ounces, and in 1889 the production was nearly 10,000 ounces in excess of the average annual production of that date. In 1890 the production was about 8,000 ounces in excess of the average, and the number of tons of stone crushed was the highest in the history of the industry.

The years since 1885 have been marked by the successful opening of old and previously abandoned mines in nearly all the older districts in the province; by the introduction of modern mining and milling machinery, and by greatly improved systematic and scientific methods of mining and exploitation. To develop your mine is now considered the "correct and necessary thing," but the writer well remembers being laughed at in 1884 by one of the "old timers" when he intimated his intention of opening up a mine by sinking, driving levels and opening up for backs and reserves. And last, though by no means least, this period has been marked by a partial disappearance af distrust amongst capitalists, and by the attraction of foreign capital to our gold fields as being ventures in which money can be profitably invested.

In most cases this investment has proved profitable, but in one or two cases, which derive prominence from their rarity, money has been paid for properties which were valueless from the start, or a management has been appointed whose incompetency doomed the enterprise to failure from the beginning, or the money for development has been squandered in huge surface plants and high salaried officials.

In almost every case where ordinary business prudence has been exercised in the selection of a property, or in the choice of a manager, success has been the result, and not failure.

During 1893 and 1894 an impetus was given to the industry by the working, in several places, of large bodies of low grade ore. Several deposits yielding from three dollars to seven dollars per ton, were exploited and equipped with modern machinery, and each of them has prospered, having earned dividends for the companies owning them.

In many places these properties have been equipped with plants that will stand comparison, for effectiveness and economy, with those of any other gold producing

country of the world, and it is not going too far to say that the working of such properties so equipped cannot fail to remove the impression which has been so prevalent in other countries that Nova Scotia had "only narrow veins of high grade but uncertain rock."

In the following table is given the production of gold for each year from 1862 to 1896 inclusive: —

Year.	Total Ounces of Gold Extracted.			Stuff Crushed.
	Oz.	Dwts.	Grs.	Tons.
1862	7,275	0	0	6,473
1863	14,001	14	17	17,002
1864	20,022	18	13	21,434
1865	25,454	4	8	24,423
1866	25,204	13	2	32,162
1867	27,314	11	11	31,386
1868	20,541	6	10	32,262
1869	17,868	0	19	35,147
1870	19,866	5	5	30,829
1871	19,227	7	4	30,791
1872	13,094	17	6	17,093
1873	11,852	7	19	17,708
1874	9,140	13	9	13,844
1875	11,208	14	19	14,810
1876	12,038	13	18	15,490
1877	16,882	6	1	17,369
1878	12,577	1	22	17,990
1879	13,801	8	10	15,936
1880	13,234	0	4	14,037
1881	10,756	13	2	15,556
1882	14,107	3	20	12,081
1883	15,446	9	23	25,954
1884	16,059	18	17	25,147
1885	22,202	12	20	28,890
1886	23,362	5	13	29,010
1887	21,211	17	18	22,280
1888	22,407	3	10	36,178
1889	26,155	6	13	39,160
1890	24,358	9	9	42,749
1891	23,391	..	..	35,212
1892	21,080	3	18	33,633
1893*	14,030	5	7	28,040
1894	14,980	7	13	39,333
1095	22,112	17	21	58,082
1896	25,596	14	6	65,873
	627,866	8	17	953,364

The gold-bearing quartz lodes of Nova Scotia occur in the Cambrian or Cambro-Silurian measures, and belong chiefly to the class of "bedded" veins, or perhaps are

*Nine months only.

ore deposits along bedding planes," being conformable throughout with the beds of quartzite and slate with which they are interstratified, but not contemporaneous. As to whether these deposits are segregations from the enclosing silicious rocks, having formed in those openings between successive strata which have accompanied the lines of least resistance in folding, is a question better left to professional geologists. Two other classes of auriferous deposits are more seldom met with: (1) "Fissure" veins, so called, being in some cases true fault fissures subsequently filled in, but more frequently being deposits filling crevices which were caused by secondary disturbances; (2) intercalated or "gash" veins of local origin and extent.

By far the greater bulk of the gold produced has hitherto come from the regular or "bedded" lodes. Sometimes these bedded deposits take the form of large interstratified belts of bluish fissile slate in which occur intercalated veins of quartz, thus forming large bodies of low-grade ore upon which, in the opinion of the writer, the future of the industry will ultimately depend. The districts of Goldenville, Beaver Dam and Mount Uniacke afford the best example of this class of deposits. In Mount Uniacke, a successful working of one of these deposits has been commenced, and the more promising district of Goldenville has witnessed a revival during 1896.

In the working of these extensive deposits mining departs from the speculative phase and assumes that of a legitimate business, as witness the continuous and successful workings of the "Great Belt" in the Black Hills of South Dakota, more familiarly known as the "Homestake" mines, which for eighteen years have been steady dividend paying properties.

The large bodies of auriferous rock in this Province, like the "Palmerston" at Goldenville, are very similar in character to the Black Hills deposits, and offer equal inducements for successful working.

The regular lodes vary, as a rule, from 2 in. to 30 in. in width, instances occurring where the lodes thin down to a fraction of an inch, or swell to 26 ft. wide, as notably in the Dufferin lode on Salmon river. The average width of the quartz may be taken as from 6 to 12 in. in the narrow veins, and the width of the milling stone in the low grade deposits at from 4 to 10 ft.

The richness of these lodes varies as much as their width does, running from $3 to $16 per ton.*

Upon lodes of such variable width and nature the cost of production will, of course, also vary widely; but as a general guide it may be stated that a lode 12 in. wide, yielding $10 to the ton, pays well to work.

During 1894, 1895 and 1896 several mines, working veins from 1 ft. to 7 ft. wide, produced and milled their quartz for prices varying from $2.27 to $3.58 per ton.†

In Stormont district one mine, having a lode varying from 2 ft. to 22 ft. in thickness, but averaging from 7 to 10 ft., is meeting all its expenses and paying a dividend on three dollar rock. In Waverley district another mine, whose vein averages only

* The year 1891 was remarbable for high yields. South Uniacke returned many lots of 10 ounces to 20 ounces to the ton, and Oldham surpassed its previous records with a yield of 643 ounces from eight tons of quartz.

†See Transactions Mining Society of Nova Scotia, Volume III.

12 in. in width, pays all expenses with rock that yields $4.00 per ton. Both of these properties are obliged to burn coal for fuel, which is a heavy item in the cost accounts.

There are at the present time over thirty-five localities in the Province in which workable deposits of gold have been found, and from three thousand to four thousand persons are dependent to a great extent, or entirely, upon the industry. The area of gold measures in Nova Scotia has been estimated by various authorities to be from 5,000 to 7,000 square miles, or from one-fifth to one-third the area of the Province, yet the actual area from which the gold thus far obtained has been won is less than 40 square miles.

The mining laws of Nova Scotia are, in the main, good, and are yearly being amended for the better. Their essential features are :—

1. All mines of gold and silver are the property of the Crown, from which titles or leases are obtained for working the same ; all gold obtained is subject to a royalty of two per centum or thirty-eight cents for each ounce of smelted gold.

2. Lands containing gold or silver are laid off in areas measuring 150 ft. by 250 ft., the lesser length being along the course of the lodes, and a lease can be obtained for any number of areas in any such one lease up to one hundred.

3. Such a lease runs for forty years, and costs the applicant $2 for each and every area contained therein. Upon each such lease in each year there must be preform ed a certain number of days' work, or as an equivalent, the lessee is given the option of paying annually 50 cents for each area therein contained : such labor being preformed or such annual payment being made, the lease is non-forfeitable. At any time prior to the expiration of said forty years the holder of the lease can surrender it and obtain a new lease for a second period of forty years. Such a lease is deemed personal property and is transferable.

4. Where such areas are situate upon private lands the law requires that an agreement must be made with the owner of the soil for leave to enter, and if such agreement cannot be made, a method of arbitration is provided whereby damages may be assessed, paid in, and leave to enter given to the owner of the lease.

Examination into the history of any mineral industry will show that such industry has only reached its full development and highest point through a complete knowledge of the methods and processes peculiar to that industry, and applying this standard to the gold mining industry of Nova Scotia, one is warranted in saying that its outlook was never more promising. There is to-day a greater amount of professional knowledge and technical skill engaged in gold mining here than ever before. The lodes are being worked with ability, with that wise economy which avails itself of every known device to save labor and cost, and also with the introduction into everyday matters of true business methods. It must not be forgotten that a gold mine is a manufactory of gold which must be conducted, even to its minutest details, with the most jealous regard to economy in all departments.

The easy means of access to the Province, and consequent convenience of personal examination, the low cost of working, the cheapness of labor, fuel and supplies, the

probable permanent nature of the deposits, as inferred from their geological structure, are all good and sufficient reasons why capital should seek investment in the gold mines of this Province.

GOLD PRODUCTION OF NOVA SCOTIA, BY DISTRICTS, FROM 1862 TO 1896.

DISTRICT.	Tons Crushed.	Total Yield.				Average Yield Per Ton.
		Oz.	Dwt.	Grs.	At $19.00. Value.	
					$ cts.	
Cariboo and Moose River	*96,848	38,024	18	20	722,473 10	7 20
Montague	21,696	37,894	1	19	720,181 76	1 14 19
Oldham	45,100	48,990	10	18	930,820 22	1 1 17
Renfrew	48,142	33,869	8	2	643,518 68	14 1
Sherbrooke	173,130	123,323	18	8	2,343,154 42	14 6
Stormont	80,316	42,313	19	13	803,965 57	10 12
Tangier	42,720	20,192	17	10	383,664 55	9 8
Uniacke†	50,656	35,683	12	8	667,988 72	14 2
Waverley	121,540	60,847	1	2	1,156,064 03	10 ..
Salmon River‡	95,601	39,373	7	18	748,094 37	8 5
Brookfield§	14,360	11,534	5	4	218,060 91	16 1
Whiteburn§	6,343	9,535	15	18	181,179 98	1 10 1
Lake Catcha¶	20,734	22,757	1	20	432,384 75	1 1 18
Rawdon, East and Central=	12,158	9,592	7	4	182,254 71	15 18
Wine Harbor (See Salmon River).	42,711	29,140	8	7	552,667 88	13 15
15-Mile Stream+	27,738	15,346	3	5	291,577 05	11 1
Malaga (from '89 to '93)	18,567	15,180	5	8	288,425 07	16 8
Unproclaimed and other Districts	62,522	44,722	10	3	849,727 62	14 7
Total to 30th Sept., 1896	980,882	638,322	12	19	12,116,203 38	.. .. ..

* From 1869. † From 1866. ‡ From 1883. § From 1887.
¶ From 1882. = From 1887. + From 1883.

New Brunswick.

The amount of positive information possessed regarding the presence of this metal in New Brunswick at present is very small. Reports of its discovery have indeed been frequent, but in the very few instances in which these appear to have emanated from reliable sources, the amount of gold observed has been so small as to discourage further efforts to obtain it. While, however, the amount of the metal actually obtained is thus insignificant, it is worth while to notice that rocks very nearly resembling those of the auriferous belt of Nova Scotia, and believed to be of the same age, are largely developed here, and further, that it is in connection with these same rocks that very many of the reported discoveries of gold have been made. The rocks referred to are those composing the slate and quartzite belts which border the great central granite axis of York and Northumberland counties, and which with the latter traverse the entire breadth of the Province. Much of this region is still densely forest-clad and difficult of access, but should any portion of it prove to be auriferous the discovery would be of inestimable value to the Province, as helping to open up an extensive region, otherwise likely to remain permanently in a wilderness condition. Among the points at which gold has been reported in small quantities may be mentioned the vicinity of St. Croix River, in Charlotte county, the Nashwaak River above Stanley, in York county, the Muniac River, in Carleton county, and the Serpentine River in Victoria county.

Quebec.

It is a matter for enquiry why the gold fields of this Province, concerning which so much has in former years been recorded, should have failed to attract the attention they so evidently deserve. For that in the Province of Quebec there exists a very large extent of territory containing rich deposits of gold, not only in the alluvions of its ancient river channels, but in many of the quartz veins which traverse the slates and sandstones of the Chaudiere and Ditton districts, and of the whole belt of similar rocks which extend along the eastern portion of the Province, contiguous to the boundary of New Hampshire and a portion of Maine, has been very conclusively established. One has but to take up the papers written on this subject by the late Mr. James Douglas, of Quebec, or to glance over the earlier reports of the Geological Survey, more especially those from 1847 to 1866, to see that in this area the chances for profitable gold mining, under suitable Government regulations and proper management, are unsurpassed by any other portion of the Dominion, and possibly even by the adjoining States.

The evidence also presented before the Select Committee appointed by the Quebec Government in 1865, to consider the question of the Chaudiere gold field, while containing, doubtless, some statements bordering on the sensational, and therefore requiring to be cautiously accepted, present such a mass of cumulative evidence, both on the part of skilled workmen in this field as well as from ordinary explorers, that we can but come to the conclusion that had such stories of the presence of gold in large quantity proceeded from any other section of the country than the Province of Quebec, the influx of gold miners and of capital would have almost equalled that of the palmy days of the Californian discovery.

The evidence presented in the different reports of the Geological Survey is also largely confirmatory of that stated by other writers on the subject ; and yet in the face of all evidence tending to prove the existence of a gold field, adapted, possibly for quartz mining, but unquestionably containing large and valuable alluvial workings, we find not more than three or four companies, almost without capital, trying in a very small way, with the worst appliances, and an almost entire lack of proper mining skill, to extract the gold from the ancient river channels, whose presence and richness have been known for twenty years, but which, except in two or three widely separated cases, have never been explored to any extent.

The history of gold mining in Quebec, from the first discovery, sixty years ago, furnishes reading, not only of great interest, but of a kind from which good sound practical lessons may be derived. The first piece of gold found in 1836 was valued at from $50 to $60 ; a very fair sized nugget for any country, and sufficiently large, one would suppose, to warrant any one interested in gold mining to make further and vigorous search ; yet for nearly fifteen years but little attention seems to have been paid to it, further than in the securing, in 1846, by the DeLery family, of the mining rights to a large territory. From 1850 to 1860 desultory mining operations were carried on at a number of points by various parties. Some exceedingly rich pockets were found on the Des Plantes and the Gilbert, as well as on the main Chaudiere river, while a series of trials at the forks of the DuLoup in 1851-52, extending over one acre of gravel from the bank of the stream with ordinary appliances only, showed a margin of profit sufficient to warrant anyone in investing the capital necessary to make a speedy and abundant fortune should the proper appliances be used. The amount of the gold obtained from this acre of gravel was $4,328, and the profit $2,148. Yet, owing to some dispute with the proprietor of a neighboring lot, the work which promised so well had to be abandoned, and nothing further was done in this quarter for nearly thirty years. It is unfortunate that the next attempt to extract the gold from the Gravels of the DuLoup in 1879-80 should not have been undertaken by some one with even a slight pretence to mining knowledge, so that the most fitting plan for successfully carrying on the washing of the gravels, and what is equally important the collecting of the gold afterward, might have been adopted, but instead we find a very large amount of money, aggregating many thousands of dollars, placed in the hands of a person who certainly, from his previous occupation, could not be supposed to have acquired much practical or scientific knowledge of the best means to be employed in the extracting of the gold. A trench 11 miles in length was dug along the banks of the River du Loup for conveying water for the hydraulic process, and a magnificent head of about 150 feet was obtained, sufficient to tear down the gravel banks at any desired rate, but very slight provision appears to have been made for collecting the gold, either coarse or fine, after the bank was torn down ; though from the trials made in 1852, it is known that there was sufficient in every cubic yard to have paid most handsome dividends, even by the old rocker method of washing. Under such management it can scarcely be a matter of wonder that the costly experiment was a failure of the worst kind.

In the work on the Gilbert, where exceedingly rich ground was found in 1863-66, the mining also was of the crudest kind. The claims allotted were very small, water could not be obtained for washing the gravel properly, and there appears to have been no proper appliances for saving the fine gold. A sluice, 1,800 feet long, built at a cost of about $12,000, to bring water from the upper part of the stream, which had been dammed for that purpose, was destroyed before it could be utilized, simply through lack of proper precaution in its construction; yet here, in the face of all these adverse circumstances, gold was obtained in large quantities, so that four men, working under the greatest disadvantages, are said to have taken out nearly $80,000 in less than four years. Anyone visiting the workings as conducted at the present day must wonder how any gold, except the coarsest, can be saved at all. Sluices of very slight pitch and of insufficient length, are unfitted with any proper means for saving the fine gold, the greater part of which must of necessity be carried away down the stream with the tailings. The only mining skill observed is on the part of those who have used the pick and shovel in some former enterprise in the vicinity, and yet gold in good paying quantities continues to be obtained, simply because much of the gold in the district is coarse, and nuggets of ten to one hundred dollars are not uncommon, while others, having a weight of nearly sixty ounces have been obtained.

Such coarse gold does not travel far, yet no practical attempt to test the quartz leads by milling has been made until recently except by one ill-starred crusher, so faulty in construction that when free gold was put in none ever could be extracted. Yet, in spite of all these well known facts, when the value and importance of the gold fields of Eastern Quebec are mentioned most people calmly shrug their shoulders and smile incredulously. Why? Because most people are content to take the results, or rather the lack of results due to stupid blundering and ignorance of the first principles of mining, properly so called, as a satisfactory and conclusive test of the true value of the entire district.

There is no doubt, as can be proved by the evidence furnished both from official reports and from other sources, that in the ancient channels of nearly every stream, tributary to the Chaudiere above St. Joseph, gold can be obtained in paying quantities with proper management and appliances.

Ontario.*

Gold is very widely distributed in the Province of Ontario, having been found at many points between the Townships of Madoc and Marmora in the east, and the boundary of Manitoba, more than nine hundred miles to the north-west. In the eastern part of the province it has been obtained to a greater or less extent at several points east of the town of Peterborough, such as Deloro, Belmont and Madoc; near Parry Sound on the Georgian Bay; east of the famous Sudbury nickel mines at Wahnapitae, from which magnificent specimens come; west of Sudbury, at the Vermillion mine; north of Lake Huron, at the Ophir mine in Galbraith township; and north of Lake Superior, at the Empress mine near Jackfish Bay; but the most

*By Dr. A. P. Coleman, Prov. Geologist to the Province of Ontario.

promising region at present lies west of Lake Superior, from Moss township to Shoal lake, on the boundary of Manitoba.

The gold deposits of the eastern part of the province have been known for thirty years, and have been worked to a small extent during that time; but some of the ores are difficult to treat, such as those mined near Deloro, and it is only recently that the difficulties seem to have been successfully met, so that their development belongs to the future. The deposits near Sudbury also are attracting attention, but cannot yet be called mines. On the north shore of the upper lakes only the Empress mine requires mention. Here work has been begun on a series of bedded or lenticular quartz veins enclosed in green Huronian schist, near an outcrop of granite. A very complete ten-stamp mill has been at work for some months, and several bricks of gold have been obtained. The ore is not high in gold and is rather refractory, so that not more than 40 or 45 per cent. is extracted by the stamp mill, the rest being contained in the concentrates, which consist of iron and copper pyrites with some galena; nevertheless the gold obtained by free milling methods already more than pays for the mining and milling. By tunnelling in from near the foot of a lofty hill the veins can be struck about one hundred and forty feet below the level of the present open working, and the ore obtained in the easiest way, without the need for hoisting or pumping apparatus. When this tunnel is made, supposing that the veins retain their present thickness of about twenty feet in all, the mine should afford at least a reasonable return for the comparatively small capital invested.

Attention is, however, specially directed at present to the main gold region of Ontario, which extends for more than two hundred and fifty miles from Moss township westward, and has been proved to he at least a hundred and thirty miles wide, between the Little American mine just south of the international boundary in Minnesota and lake Minnietakie, twenty miles north of the Canadian Pacific Railway. Here the number of locations, usually of forty acres each, taken up for gold mining purposes within the last four years runs into the hundreds. Many of these will of course not prove workable mines; but, on the other hand, new finds are constantly being made, sometimes in quite new localities, sometimes in regions supposed to have been well explored years ago.

In general the gold bearing veins occur in green choloritic and hornblendic schist, probably of Huronian (Keewatin) age, and are of a bedded or lenticular kind; but sometimes they are found in masses of eruptive granite or gneiss, which have pushed their way up through the Huronian schists. In the latter case the veins are commonly true fissures, and may be followed for considerable distances. In either case the contact of an eruptive rock with schist seems of importance, since the best veins are found within a mile or two of such a contact.

In addition to gold bearing veins there are deposits of other kinds which are worthy of attention, such as fahlbands, wide bands of schists heavily charged with sulphides, and showing a considerable amount of free gold; and dikes of felsite or quartz porphyry containing pyrites and gold; though up to the present none of these have been mined sufficiently to prove their value.

On and near Reserve Island in the River Seine, near the entry of Partridge River, several gold bearing veins have been discovered, and two or three of them are being opened up by Mr. H. B. Proudfoot, but at the time of our visit his shafts had not been sunk more than twenty feet and it was impossible to judge of the real value of the locations.

On Sawbill Lake, which opens into the Seine from the north some distance below Proudfoot's camp, and thirty-three miles southwest of Bonheur station on the Canadian Pacific Railway, the now well-known Sawbill mine is situated. At our arrival early in July we found that a shaft had been sunk to a depth of forty-nine feet, and that the vein had increased in width from four feet on the surface to six at the bottom, and showed very distinct walls. The vein can be traced for more than a quarter of a mile on the surface, and will no doubt afford a great quantity of ore. The quartz contains the usual sulphides, and free gold can frequently be seen. Mr. F. S. Wiley, the manager, states that the shaft has since been sunk below ninety feet, with no diminution in the width of vein nor in the gold contents of the quartz. It is worthy of special note that this promising mine is in what has been mapped by the Geological Survey as biotite-granite gneiss of the Laurentian, so that gold occurs in satisfactory amounts in a rock hitherto looked on as barren. Several other gold bearing veins of a somewhat similar kind have been located in the region since work began at the Sawbill mine, and there is reason to suppose that diligent prospecting will disclose a number of valuable deposits.

Still farther down the Seine, a little west of its expansion, Steep Rock Lake, the Harold Lake Mine, is situated. Here several veins, in general, not very large, have been more or less opened up by shafts or drifts, and a five-stamp mill worked intermittently has yielded a number of gold bricks. One small vein on the shore of Harold Lake contains ore exceedingly rich in free gold, in leaf form. The country rock here is quite varied, granite of the greenish altered kind, often called protogine, piercing green and yellowish rocks of the Huronian.

From this point westward to Shoal Lake, another expansion of the Seine River, no mining has been done, though a number of locations have been taken up, especially west of Calm Lake.

Shoal Lake may be looked on as the focal point of the Seine River and Rainy Lake gold region, hundreds of locations having been taken up during the last three years within a radius of ten miles of this small lake, and a very considerable amount of work has been done on several of the properties.

Up to the present the most important mines have been found in an area of protogine granite about six miles in length from northeast to southwest, and about a mile in width, lying between Shoal and Bad Vermillion lakes. The whole granite area has been located and scores of veins have been found, varying greatly in gold contents, but generally true fissure veins with well defined walls of slickensided talc or sericite schist.

The largest amount of development has been done on the Foley mine, owned by the Foley Mines Co. of Ontario, the property comprising AL74, 75, 76. On one of their veins, the Bonanza, one shaft had been sunk to 210 feet and another 1,200 feet

away to a depth of 113 feet, and more than 300 feet of drifting had been done at various levels at the time of our visit, July 17. The vein proves very uniform in width, running from 2½ to about 4 feet, and the ore, which contains a considerable amount of visible gold, is said to average $20 in free milling gold and $5 in concentrates per ton. Well equipped twenty-stamp has been erected. There is every reason to expect that this will prove a very profitable mine.

The Ferguson mine is situated northeast of the Foley mine in the same area of granite, on locations AL110, 111 and K223. This property is owned by the Seine River Gold Mines Company of England, which is at present doing mainly exploring work. There are several veins ranging from a foot to three feet or more in width, and traceable for hundreds of feet. On the Daisy vein two shafts had been sunk to a depth of fifty feet, and sinking had been begun on the Government vein at the time of our visit, rich specimens coming from the latter ore body. On the Finn vein, one of the widest, a shaft had been sunk seventy feet. The work thus far done shows that the veins are not usually very wide, but that there is in the aggregate a large amount of fairly rich ore available.

The only other property in the region requiring special mention is the Lucky Coon, or Hillier mine, on 655P, where a shaft has been sunk to the depth of about fifty feet on one of the veins and a five-stamp mill erected. The quartz looks well, and the vein chiefly worked is about eight feet wide at the bottom of the shaft. Owing to disagreements among the owners the mill was run for only a short time. This mine has been taken hold of by Edinburgh capitalists, who propose to develop it this winter with the intention of purchasing if the results are satisfactory.

Many locations have been taken up in the Keewatin schists east of Shoal Lake, and also along Little Turtle River and lake, north of Bad Vermillion Lake. These deposits are mainly bedded veins or fahlbands, and have been very little developed, though rich specimens of free gold come from them, and a plucky company of Norwegians have pounded out a few hundred dollars worth of gold with hand stamps from a vein on the Little Turtle.

North of Rainy Lake and south of the Canadian Pacific Railway, at Wabigoon, is a very promising region on the shores of Lake Manitou, and smaller bodies of water near by. Ore deposits of varying kinds and of all degrees of richness occur here, and brilliant specimens are found, but nothing that can be dignified with the name of mining has yet been attempted. A two-stamp Tremaine mill has been at work for a time under the management of Mr. E. B. Haycock of Ottawa, who reports an average of about $25 per ton from small amounts of rock obtained from a number of veins on Lake Manitou, in the aggregate about eighteen tons. Difficulty of access from the want of a summer waggon road, by which to bring in the supplies and machinery, has retarded development in this district.

Gold has been found at various points north of the railway, *e.g.* on Minnietakie and Sturgeon lakes; but the locations are yet only in the prospecting stage.

A canoe journey westward over seldom visited waters took us from Manitou Lake to Regina Bay, a part of Whitefish Bay, the long southeasterly projection of the octopus-armed Lake of the Woods. The Regina mining camp, with its trim build-

ings, comes as a pleasant surprise to the canoeman who for five days has seen no human being outside his own party. The Regina (Canada) Gold Mine Company (Limited), of London, England, is operating this mine, Lieut.-General H. C. Wilkinson being managing director. At the time of our visit a shaft had been sunk 160 feet, and 500 feet of drifting had been done on the main vein, besides the sinking of small shafts for the testing of one or two other ore deposits. The vein on which most work has been done begins in a mass of protogine granite near the shore, and runs into a weathered diabase (trap) towards the south. There is a rich shoot of ore running down through the granite into the diabase. The gold is fine and difficult to save by the present concentrators. The mill is of ten stamps, and the number of men employed about fifty.

Many locations have been taken up near the Regina and farther northwest on Yellow Girl and other bays, but none have been worked seriously. Nearer Rat Portage, however, especially along the contact of Laurentian and Huronian, running northwest from Andrew Bay to Black Sturgeon Lake, a number of shafts have been sunk, generally to a depth of fifty feet, and at several points abandoned or active mining plants may be seen. At the time of our visit only two mines were producing gold, the Golden Gate, whose ore was being crushed at the mill of the adjoining Gold Hill mine, and the Triumph, which was having its ore tested with a two-stamp Tremaine mill.

There are a number of other promising properties, including some wide fahlbands north of the Canadian Pacific Railway, such as the Scramble mine, and two or three others said to have been found by the aid of a divining rod imported from Sweden. However found, these sulphide-bearing bands of schists readily yield gold in the pan, and probably some of them will turn out valuable mines.

The most justly famous mine in our whole western gold field is undoubtedly the Sultana, on an island seven miles southeast of Rat Portage, owned by Mr. John F. Caldwell of Winnipeg. After years of hard struggle against adverse circumstances, this plucky and energetic mine owner is reaping a solid reward in the shape of a great body of rich quartz in places forty feet wide, and already followed more than three hundred feet in depth. Nearly a thousand feet of drifting have been done, and there is ore enough in sight to keep a well equipped ten stamp mill or one double its size running for years. The ore bodies appear to be lenticular, the lower one of immense size, and are enclosed in the sheared and schistose edge of an area of coarse porphyritic granitoid gneiss, mapped by the Geological Survey as Laurentian, but adjoining green Huronion rocks. The ore is somewhat quartzitic looking, contains one or two per cent. of iron pyrites, and is free milling to the extent of 75 or 80 per cent. A recently finished chlorination plant extracts the gold carried by the sulphides very satisfactorily. Gold mining at the Sultana has been reduced to a thoroughly business-like basis, the mill running with scarcely a halt and the weekly brick being turned out with perfect regularity. If this splendid mine had been in the hands of a stock company much would have been heard of its dividend-paying powers ; but its owner is too modest to boast of its success.

Perhaps the most interesting mining development of the year is to be found on a western Shoal Lake, thirty-five miles from Rat Portage and about ten miles east of the boundary of Manitoba. The Mikado mine, found by an Indian a year ago, has been purchased for $25,000 by a London company under the chairmanship of Col. W. T. Engledue, and has been worked sufficiently to show that the ore is very rich, though not enough sinking has been done to prove the extent of the deposit. The quartz contains a variety of sulphides, including a sulphide of bismuth, new to the Lake of the Woods region, and a considerable part of the gold is carried by these refractory minerals; but probably two-thirds of the gold contents are free milling, the gold occurring as thin plates rather than nuggets. The ore treated is the richest found in large quantities in Ontario, and the ore now on the dump after only a few months' work by a small force contains values sufficient to pay for the mine and a simple equipment.

Several of the other finds of very rich ore have been made in the vicinity of the Mikado, and next summer will probably see the development of an important mining camp in that district.

At a number of other points on Lake of the Woods and its bays promising finds of gold have been made, *e.g.* at Camp Bay to the southeast, but none of them have been worked sufficiently to make sure of their value.

Looking at our gold mining region as a whole, one is struck by the wide extent over which gold has been found, the variety of deposits that occur, the ease with which they may be reached, the free milling character of most of the ores, all points in its favor as compared with most gold regions.

No part of the region is more than forty miles from a railway or steamboat, and most of the mines are within a few miles of the rails or of navigable waters. In winter a road sufficient to take in heavy machinery may be made without difficulty to any point in the region, and the Ontario Government has shown itself liberal in granting assistance to such roads.

All parts are readily reached by canoes in summer. Plenty of water of good quality is found everywhere, and wood for fuel, building or mine timbering almost everywhere. The region is not an inaccessible desert, nor covered with malarious swamps, nor cut off from civilization by precipitous mountains. Supplies of all sorts are cheap; efficient labor can be obtained on easy terms, the labor of white men, not of negroes or Indians; and life and property are as safe as anywhere on the globe.

The laws relating to mining and mining locations are simple, and generally admitted to be fair and favorable to the prospector and mine owner. All locations are bound by east and west and north and south lines, reducing boundary disputes and the customary litigation of mining countries to a minimum.

GOLD YIELD OF ONTARIO, YEAR ENDING 31ST OCTOBER.

1892	of a value of	$ 36,900
1893	"	32,960
1894	"	32,776
1895	"	50,281
1896	"	142,605

British Columbia.

Yield of Placer Gold, 1858, to 1893.

1858	$ 705,000	1876	$1,786,648
1859	1,615,070	1877	1,608,182
1860	2,228,543	1878	1,275,204
1861	2,666,118	1879	1,290,058
1862	2,656,903	1880	1,013,827
1863	3,913,563	1881	1,046,737
1864	3,735,850	1882	954,085
1865	3,491,205	1883	794,252
1866	2,662,106	1884	736,165
1867	2,480,868	1885	713,738
1868	3,372,972	1886	903,651
1869	1,774,978	1887	693,709
1870	1,336,956	1888	616,731
1871	1,799,440	1889	588,923
1872	1,610,972	1890	490,435
1873	1,305,749	1891	429,811
1874	1,844,618	1892	399,526
1875	2,474,004		

Gold Yield by Districts in 1896.

	Placer.		Quartz.		Total.
	Ounces.	Value.	Ounces.	Value.	Value.
Cariboo District—					
Barkerville division	4,145	$ 82,900			$82,900
Lightening Creek division	2,650	53,000			53,000
Quesnellemouth "	2,555	51,100			51,100
Kiethley Creek "	9,853	197,050			197,050
Cassiar	1,050	21,000			21,000
Kootenay East	1,054	21,076			21,076
Kootenay West—					
Nelson division	275	5,500	236	4,720	10,220
Slocan "			152	3,040	3,040
Trail Creek division			55,275	1,104,500	1,104,500
Other "	231	4,627	35	700	5,327
Lillooet	1,683	33,665			33,665
Yale—					
Osoyoos district			6,561	131,220	131,220
Similkameen district	450	9,000			9,000
Yale	3,255	65,108			65,108
Total	27,201	$544,026	62,259	$1,244,180	1,788,206

YIELD OF QUARTZ AND PLACER GOLD, 1893 TO 1896.

YEAR.	Quartz.		Placer.	Total.
	Ozs.	Value.	Value.	Value.
1893	1,170	23,404	$356,131	$379,535
1894	6,252	125,014	405,516	530,530
1895	39,264	785,271	481,683	1,266,954
1896	62,259	1,244,180	544,026	1,788,206
Total to date	108,945	$2,177,869	$57,704,855	$59,882,724

The first discovery of the precious metal in British Columbia was in 1858, the total production to date being officially reported at $59,882,724, but as only an estimate can be made of the quantity carried away by private individuals, the actual quantity is larger. Of this amount gold to the value of $57,704,855 is reported to have been won by placer mining.

Referring to the occurrence of placer deposits in the province, Dr. George M. Dawson, C.M.G., Director of the Geological Survey of Canada, in an address before the Royal Colonial Institute, said :—

"The story of the discovery and development, the palmy days and the gradual decline in importance of any one of these mining regions, rightly told and in sufficient detail, would constitute in itself a subject of interest. But without attempting to do more than name the districts here, it is of importance to note how general, throughout the whole extent of the great area of British Columbia, the occurrence of deposits of alluvial gold has been proved to be. The gold thus found in the gravels and river beds is merely that collected in those places by natural processes of waste acting on the rocks, and the concentration of their heavy materials during the long course of time. The gold has been collected in these places by the untiring action of the streams and rivers, and it must in all cases be accepted as an indication of the gold-bearing veins which traverse the rocky sub-structure of the country, and which await merely the necessary skill and capital to yield to the miner still more abundantly."

Although hydraulic mining has long been practised on a small scale, particularly in the vicinity of the old gold mining camps in the Cariboo district, it is within the past three years only that really extensive operations of this kind have been initiated. Of these the most important are the Cariboo Hydraulic Mining Company, operating on the South Fork of Quesnelle river ; the Cariboo Gold Fields, Limited, on William's Creek ; the Golden River Quesnelle on Quesnelle river ; the Horsefly Gold Mining Co., and the Horsefly Hydraulic Mining Co. on the Horsefly river.

Mr. John B. Hobson, M.E., General Manager of the Cariboo and Horsefly Companies, to whose practical knowledge and advice based upon long experience in California, the renewed interest in hydraulic mining in the Cariboo district is largely due, has reported as follows* :—

* Paper read before the General Mining Association of Quebec.

"I have seen in British Columbia, included the Yale, Lillooet and Cariboo districts, three times the area of auriferous deposits that are known to exist in the whole of the State of California.

"The British Columbia gravels that I have examined, and that may be considered available for hydraulic working, yielded results varying from one cent to $1.50 per cubic yard, and as a whole average richer than any I have seen in California.

"In some properties examined, I sampled streaks, some of which were on bedrock and others 150 feet above the bedrock, that yielded prospects varying from $2 to $36 per cubic yard. We have no such rich deposits in California.

"The exploitation and equipment of hydraulic mines is expensive, and large sums of money are required to provide water supply and hydraulic plant, to get the mines opened and placed on a paying basis.

"For this reason great care should be exercised by those intending to engage in such enterprises. Competent engineers should be employed to investigate the source of water supply, determine the available gradient for sluices, dumps for debris and the gold tenure of the gravel. The absence or insufficiency of either of the first three of these conditions means the failure of the enterprise to prove remunerative.

"I do not hesitate to predict that the day is not far distant when the gold output from the auriferous placers of British Columbia will not only surprise Canadians, but will astonish the civilized world."

Lode Mining.

The principal lode mining district in British Columbia is at Trail Creek, about seven miles west of the Columbia river, and six miles north of the international boundary.

The ores mined have been classified by Mr. Carlyle, Provincial Mineralogist, into three classes :—

(*a.*) Those large deposits of coarse-grained massive pyrrhotite, locally known as the "iron ore," in which very little or no value in gold is carried.

(*b*). The ore found in many claims in the south belt, as the Lily May, Homestake, Mayflower, Gopher, Curlew, R. E. Lee, etc., in which the sulphides are not pyrrhotite but iron pyrites and marcasite (white iron), with in some of these mines much arsenopyrite, and also zinc blende and even galena, in which case the silver value exceeds the gold, and the percentage of copper is very small or nothing.

(*c.*) The typical ore of the camp as sold by the Le Roi, War Eagle, Iron Mask, or Josie, is divided into first-class and second-class. The first-class consists of nearly massive fine grained pyrrhotite and copper pyrites, sometimes with a little magnetite, or mispickel, with more or less quartz and calcite. In this class of ore, as got from the lowest working workings of the Le Roi, the amount of quartz is much higher, the smelter returns giving 41 to 52.8 % silica, and 20.6 to 26.8 % FeO., but this is proving the best ore in the mine, the average smelter returns were on 1,200 tons, 2.6 oz. of gold, 1.8 oz. of silver, and 2.5 % of copper, or $53.05 net, per ton while some shipments went as high as 4.06 oz. in gold.

The second class ore, and the bulk of the ore of the camp shipped, will be most probably of this character and value, is a diorite with a comparatively small percentage of these sulphides, but the value is still very good ; 1,800 tons of the Le Roi second class, yielded by smelter returns, an average of 1.34 oz. of gold, 1.4 oz. of silver, and 1.6 % copper, or $27.97 net per ton. Mr. Bellinger, of the Trail Smelter, kindly gave the average analysis of this ore to be FeO. 22. %' SiO_2. 42.5 %, CaO. 7 %, MgO. 3. %, Al_2O_3 18 % ; copper, 1.5 %, S. 6 %.

The history of the district shows that the first claim was located by a French Canadian in the summer of 1889, and was recorded the following May. In 1890 several claims were located, among them the two which have since been developed into mines, and upon whose success the fame of the district is founded. The first shipment of ore was made in the Spring of 1891, from the Le Roi, which amounted to ten tons and yielded about $86 per ton. Work was intermittent during '91 and '92, but in the winter of '93 and '94 the Le Roi made shipments of ore and began active operations, which have since continued, amounting, according to a statement from the mine officials, in all to about 37,000 tons, of a gross value of $1,500,000. During this period operations were also being carried on upon the Centre Star and War Eagle claims, so that the camp may be said to date its life from the winter of '93-94, and is therefore about three years old.

The production of the district in 1895 was valued at $629,940, and in 1896 at $1,104,500.

AGNES HYDRAULIC MINING AND MILLING CO.,Ltd.

Incorporated 1896. Authorized Capital, $200,000, in shares of $1.00.

Directors :

Capt. M. Neelin Garland. | John Lyons. | John H. Lyons.

Head Office : Capt. M. N. Garland, North Bend, B. C.

Owns and operates three auriferous gravel deposits comprising 50 acres, two of which are situated on the west side of the Fraser River, and are a portion of the celebrated Boston Bar Flat, and lie within half a mile of North Bend station on the main line of the Canadian Pacific Railway; the other is situate three and a-half miles north on the east side. The benches average 125 feet above medium high water level, some running 200 feet. Tests of the gravel on the two first-mentioned properties show an average of 25 cents per cubic yard; on the other property an average of 35 cents per cubic yard is reported. Being opened.

ALLISON RANCH HYDRAULIC MINING CO., Ltd.

Incorporated 1896. Authorized Capital, $250,000, in shares of $5.00.

Directors :

Lieut.-Col. T. O. Townley, Vancouver, B. C., *President.*

John B. Laidlaw, Toronto. | F. J. Coulthardt, New Westminster, B.C.
Henry Doyle, Vancouver. | Charles R. Townley, Vancouver.
Joseph E. Gaynor, New Westminster.

Eastern Board of Directors :

John B. Laidlaw. | J. H. Chewett. | Hillyard C. Dixon.

Head Office : Fred J. Coulthardt, Secretary-Treasurer, New Westminster.

Formed to acquire and work mining claims in the Similkameen division of the Yale district, in the Province of British Columbia, consisting of gold and platinum bearing gravels, extending for two miles along the north side of the Tulameen River, at the junction with the Similkameen River at Princeton.

1st. All that piece of ground situate at Princeton, B. C., and commencing at a post about 100 yards north of J. F. Allison's house; thence west 40 chains; thence north 40 chains; thence east 40 chains to the point of commencement, and containing 160 acres, and known as claim No. 1.

2nd. All that piece of ground situate on the Tulameen River, commencing at a stake placed at the south-east corner of Claim No. 1; thence south 40 chains; thence west 40 chains; thence north 40 chains; thence east 40 chains to the point of commencement, and containing 160 acres, and known as Claim No. 2.

3rd. All that piece of ground commencing at the south-east corner of Claim No. 2; thence south 40 chains; thence west 40 chains; thence north 40 chains; thence east 40 chains to the point of commencement, and containing 160 acres, and known as Claim No. 3.

4th. All that piece of ground commencing at the south-east corner of Claim No. 3; thence south 40 chains; thence west 40 chains; thence north 40 chains; thence east 40 chains to the point of commencement, and containing 160 acres, and known as Claim No. 4.

The gravel deposit consists of three benches, of the varying height of 57 feet, 133 feet, and 192 feet to 250 feet; these benches being half-a-mile wide, and extending two miles along the Tulameen River. Tests of the gravel are reported to show an average of 16¾ cents per cubic yard of loose gravel, exclusive of the "pay gravel," which usually exists on bedrock property, to be equipped and opened up during the season of 1896.

ANDERSON GOLD MINE.

Capital invested, about $10,000.

Sole Owner:

John H. Anderson, Musquodoboit Harbor, Halifax Co., N. S.

This mine is situated in the Lake Catcha district, about four miles from the village of Musquodoboit Harbor, in the County of Halifax, Province of Nova Scotia. Property comprises 91 gold areas. Small force employed. Equipped with 10 stamp mill and other plant, estimated to be of value of $6,000. The official returns for 1892, '93 and '94 are :—

1892.....	282 ozs.	11	dwts.	6	grs.	from 344	tons	rock crushed.
1893.....	262 "	3	"	.....	"	156	"	"
1894.....	642 "	4	"	.....	"	661	"	"
1895.....	472 "	19	"	.....	"	690	"	"
1896*.....	109 "	9	"	.....	"	26	"	"

ANTLER CREEK MINING CO., Ltd.

Authorized Capital, $1,000,000.

Directors:

T. Dunn. | R. G. Tatlow. | W. D. Burdis.

Head Office: Major R. G. Tatlow, Vancouver, B. C.

By an Act of the Legislature of British Columbia, under date of 8th April, 1896, this company holds under lease a number of placer mining claims in the Cariboo district, Province of British Columbia, paying therefor a rental of $1,500 per annum, and covenanting to expend thereon, or some part thereof, in the working and developing of the property, not less than $10,000 per annum. The leases consolidated by the Act referred to comprise :—

*Mill destroyed by fire in 1896.

1. David Oppenheimer, lease on Antler Creek of 1,000 feet by 5,280 feet, dated 10th June, 1895.

2. David Oppenheimer, lease on Canadian Creek of 2,640 feet by 2,640 feet, dated 10th June, 1895.

3. David Oppenheimer, lease dated 10th June, 1895, on Cunningham Pass, of certain lands described in the lease of the same, as follows: Commencing at the initial post on the right bank of Antler Creek: thence northerly down Antler about 1,400 feet; thence south-easterly down Cunningham Pass 6,230 feet; thence south-westerly 1,000 feet; thence north-westerly one mile to the point of commencement.

4. Isaac Oppenheimer, lease on Antler Creek of 1,000 feet by 5,220 feet, dated 10th June, 1895.

5. Isaac Oppenheimer, lease on French Creek of 2,640 feet by 2,640 feet, dated 14th June, 1895.

6. Isaac Oppenheimer, lease on Cunningham Pass of 1,000 feet by 5,280 feet, dated 13th June, 1895.

7. R. G. Tatlow, lease on Cunningham Pass of 1,000 feet by 5,280 feet, dated 10th June, 1895.

8. R. G. Tatlow, lease on Antler Creek of 1,000 feet by 5,280 feet, dated 13th June, 1895.

9. R. G. Tatlow, lease on Valley Creek of 1,000 feet by 5,100 feet, dated 14th June, 1895.

10. Dougal Patterson, lease on Cunningham Creek of 1,000 feet by 5,280 feet, dated 14th June, 1895.

11. Dougal Patterson, lease on Valley Creek of 1,000 feet by 5,280 feet, dated 10th June, 1895.

12. John Patterson, lease on Antler Creek of 1,000 feet by 1,348 yards, dated 10th June, 1895.

13. Thomas Dunn, lease on Cunningham Pass of 1,000 feet by 3,480 feet, dated 10th June, 1895,

14. Thomas Dunn, lease on Valley Creek of 1,000 feet by 5,280 feet, dated 10th June, 1895.

15th. Thomas Dunn, lease on Antler Creek of 1,000 feet by 5,280 feet, dated 13th June, 1895.

ATHABASCA GOLD MINING CO., Ltd.

Incorporated 19th September, 1896. Authorized Capital, $1,000,000 in shares of $1.00.

Directors:

B. W. Shiles. | J. B. Kennedy. | G. O. M. Dockrill.

Head Office: G. O. M. Dockrill, Secretary, New Westminster.

Mines Office: Nelson, B.C.

Owns and operates the Athabasca, Algoma and Manitoba mineral claims, 2½ miles from Nelson, West Kootenay district, B.C. In 1896 a tunnel was being driven under contract. To be equipped with stamp mill and other plant in the spring of 1897.

BANNOCKBURN GOLD MINING CO., Ltd.

Incorporated 1896. Authorized Capital $500,000, in shares of $1.

Directors:

W. K. McNaught, | John S. King, | John Lamb, | Dr. W. E. Haminell, O. B. Shepherd, | J. Enoch Thompson.

Mines Office: W. A. McNaughton, M.E, Bannockburn, Ont.

Owns and operates a gold location, lot 28, in the 5th Concession of the Township of Madoc, Hastings County, Ontario, equipped with a 10-stamp mill and other machinery.

BARACHOIS GOLD MINING CO.

Directors:

Steven Dawson. | Rod Macdonald. | B. M. Davidson. | W. A. Adams.

Mines Office: R. Sherman, Wine Harbor, Nova Scotia.

Property at Wine Harbor, Guysboro' County, Nova Scotia; equipped with 10-stamp mill, hoisting and pumping plant. 23 persons employed in 1896. Official returns of the gold won show: 1895, 693 tons rock crushed (4 months only) gave 362 oz. 0 dwt. 12 grs.; 1896, 806 tons rock crushed, gave 428 oz, 6 dwt. 21 grs.

BEATTY GOLD DREDGING AND MINING CO., Ltd.

Incorporated 1896. Authorized Capital, $50,000, in shares of $100.

Directors:

H. C. Symes. | J. A. McSloy. | W. L. Beatty. | H. McCulloch. A. O. Beatty. | B. R. Paine.

Head Office: H. C. Symes, President, Niagara Falls, Ont.

Formed to acquire from M. Beatty & Sons, Welland, Ont., the lease of the Boston Bar, on the Fraser River, near North Bend, B. C., together with a dredging plant to operate under the lease; to mine for gold and other minerals, and generally to carry on the business of mining for gold and other minerals; to acquire, lease and deal in mines and other mining rights, mineral claims and franchises, and mining rights elsewhere in that province and throughout the Dominion of Canada.

The dredging plant consists of a combined dipper and suction dredge, hull 75 ft. long, 30 ft. wide, a complete set of dipper dredge machinery, with improved water-tight dipper, a special hydraulic sand pump, steam spud hoisting machinery, warping drums with wire cables and anchor for moving the dredge about in the river, which flows swiftly at this point. A scow with sluice box and grizzley upon it, and a dump scow to take the stones out of the way after they are separated from the gravel and sand.

BIG THREE GOLD MINING CO.

Organized August, 1896. Authorized Capital, $3,500,000.

Directors:

Rufus H. Pope, M. P. | O. G. Labaree. | R. D. Morkill.
J. P. Graves. | C. H. Wolff.

CANADIAN OFFICE:

R. Dalby Morkill, Sec.-Treas., Rossland.

Head Office:

J. P. Graves, Spokane, Wash.

Owns and operates three claims, the "Mascot," "Southern Belle," and Snow Slide, situated in the Trail District, Province of British Columbia. Development of claims proceeding, a force of 30 persons being employed at date of report.

BIG VALLEY CREEK GOLD MINES, Ltd.

Registered 24th April, 1896. Authorized Capital, £125,000, in shares of £1 each.

Directors:

The Earl of Kilmorey, M. P.
Ross Robinson. | Thos. Sopwith. | Walter Holdsworth. | Frank Davies.

Advisory Board in Canada:

Hon. Jas. Reid, Quesnelle, B. C. | Dr. J. W. Powell, Victoria, B. C.
William Adams, M. P. P., Cariboo, B. C.

CANADIAN OFFICE:

Major C. P. Dupont, Victoria, B. C.

Head Office:

Jasper Foster, 6 Great St. Helens, London E. C.

Formed to acquire and work four gold mining leases, each measuring 40 by 40 chains, or 160 acres, and forming a total area of 640 acres, in the district of Cariboo, Province of British Columbia. It is intended to begin operations in 1897 on the beds

of the creeks by diverting the water of the Big Valley Creek, by the construction of a dam and by drifting, and it is estimated that at a cost not exceeding £1,400 the gold in the bed of the river will be made available in the course of a few months. For the further development of the property it is intended to construct reservoirs, ditches and other works to bring the required water power to hydraulic at least 5,000 cubic yards of gravel per day from the high auriferous banks enclosing the rocks. The purchase price for the property was £100,000, payable as to £6,000 in cash and the remainder in fully paid shares, leaving £25,000 available for working capital.

BLOCK HOUSE GOLD MINING CO., Ltd.

Incorporated 15th December, 1896. Authorized Capital, $8,000, in $10.00 shares.

Directors:

Capt. W. H. Cashon. | A. K. McLean. | W. H. Prest. | Capt. J. Hines.
J. Ernst. | Dr. Stewart. | B. H. Porter.

Head Office: Bridgewater, Lunenburg Co., N. S.

Mines Office: W. H. Prest, Manager, Blockhouse, Lunenburg Co., N. S.

Owns and operates 127 gold areas at Block House, Lunenburg County, Province of Nova Scotia. Average size of vein worked, 1 ft. During 1896 220 tons milled gave 360 oz. of gold. Mill and other machinery being constructed at date of report.

BLUE NOSE GOLD MINING CO., Ltd.

Incorporated 1896. Authorized Capital, $50,000, in shares of $100.00.

Directors:

Simon A. Fraser. | Thos. Cantley. | John W. Fraser. | A. G. McNaughton.
John Craig.

Head Office: John Craig, Secretary, New Glasgow, N. S.

Mines Office: A. G. McNaughton, Superintendent, Goldenville, N. S.

The gold areas controlled by this company number 166, and comprise the Caledonia, Cobourg, Woodbine and Springfield properties, at Goldenville, in the Sherbrook district, Province of Nova Scotia. Size of vein worked, 12 to 15 in., yielding 6 dwts. per ton. Produced in 1896, 423 ozs. from 1,536 tons of rock milled; three months work only. The plant comprises:

Stamp Mills—(Old) 12 stamps; (new) 20 stamps, steam-driven; 40 h.p. horizontal multitubular boiler; compound condensing engine; weight stamps 850 lbs.; speed 80 p. m.; wire screen 40 mesh.; Hammond ore feeders; Forster ore breaker.

Boilers in place—Two multitubular; two upright.

Drills—Ingersoll-Sergeant.

Hoisting Engines in place—Two, built by Fraser Bros., New Glasgow.

Pumps—Four in place, Cornish.

THE BLACK STURGEON MINING CO., OF ONTARIO, Ltd.

Capital, $1,000,000. Shares of $1.00 each.

Directors:

Hugh J. Macdonald. | Wm. C. Edwards. | Herbert H. Beck.
Newton C. Westerfield. | Robert H. Agnew. | Geo. A. Hamilton.
Robert J. Blanchard.

Head Office: Rat Portage, Ont.

Formed to explore for, locate and acquire by gift, pre-emption, purchase, lease, discovery, development or exchange, or by any other lawful means any mineral claims or leases of every description or mines, mining property and mining interest, and to pay for the same partly or wholly in money, or partly or wholly in the shares of the capital stock of the Black Sturgeon Mining Company of Ontario, Limited, wholly or partly paid up or issued as wholly or partly paid up and non-assessable, and to work, operate, sell, lease or otherwise dispose of the same. Being opened.

BRITISH COLUMBIA GOLD MINING CO., Ltd.

Incorporated 1896. Authorized Capital, $1,000,000.

Directors:

F. S. Timberlake. | L. B. Hesse. | H. Heffering.

Head Office: F. S. Timberlake, President, Vancouver.

Formed to adopt and carry into effect an agreement dated 6th July, 1896, and made between F. S. Timberlake, S. I. Timberlake and H. Heffering, of the one part, and Adolphus Williams on behalf of the company of the other part, to acquire mining property and carry on mining in British Columbia. Own and at present operate some six mining claims at Howe Sound, British Columbia.

BRITISH COLUMBIA SMELTING AND REFINING CO., Ltd.

Incorporated 1896. Authorized Capital $2,500,000, in shares of a par value of $25.00.

Officers:

F. Aug. Heinze, *President.*

J. D. Fitzgerald, *Commercial Superintendent.* | H. C. Bellinger, *Metallurgist.*

Canadian Office : Trail, B.C.

Owns and operates the Trail Smelting Works, at Trail Creek, West Kootenay, Province of British Columbia. The works comprise :—

The Sampling Mill, daily capacity 150 to 200 tons, bin capacity in the mill, 750 tons. The ore passing through a 12 x 22 inch Blake crusher, is run through a trommell, whence the fines go to a Constant cylindrical sampler, and the over-size to a 9 x 15 crusher and rolls, and then to the sampler and into the bins, until the lot of ore is settled, from whence it goes to the calciners or the bins from which it can be drawn in cars to the blast furnace. This sampler is inadequate for the amount of ore offered, and is now being enlarged so as to handle 350 to 400 tons per 24 hours.

In the roast house is one O'Hara automatic calcining furnace, with foundations laid for a second. This furnace is 120 feet long over all, and has two 90-foot hearths, one above the other, 9 feet wide. One travelling chain passes along the centre of the hearths, carrying six plows and 6 trolleys or chain carriages, at the rate of about 25 to 35 feet per minute, and as yet very little repairs have been required, the chain, plows, and trolleys showing but little sign of of corrosion in the furnace. Fifty tons of ore crushed to pass a half-inch ring are roasted per day, with a loss of 70 per cent. of sulphur contents, the ore taking 12 to 14 hours to pass through the furnaces in which ten fire places fired with wood supply the heat. Besides this furnace, there are in the furnace-room six circular calciners, such as used in Butte, placed above the reverberatories, the ore automatically fed, passing over six horizontal revolving hearths that discharge alternately from the rim and centre upon the lower one, thence into the hoppers below that are immediately over the hearth of the reverberatory. It is designed in this furnace that when once ignited no further fuel will be needed than the sulphur, but they must run continuously, and on account of irregularity, until recently, in the operation of the reverberatories, these calciners have not been used.

The dust chamber is 180 ft. long, 10 x 12 ft. inside, with wing walls from the sides every 10 ft, not over-laping, but having a clear space through the chambers to the chimney, which is 140 ft. high and 8½ feet square inside.

Furnace Room—60 x 310 feet, 68 feet to peak of roof. The ore is being smelted after two methods :—*(a.)* In four reverberatories, hearths 14 x 22 feet, 40 tons each per 24 hours, in charges of roasted and unroasted ore, slag and limestone, are now being treated. The fuel is wood, but as this is not yet dry enough to give the required heat, coal also is being used, over 70 tons a day, from the colleries of the McNeill Co., at Anthracite, on the eastern limits of the Rocky Mountains, whence it is brought over the Canadian Pacific Railroad to Revelstoke or Arrowhead, and thence in scows down the Arrow Lakes, and the Columbia to the smelter, whence it is raised up an incline 160feet by a small steam hoist with cable and car, to a trestle along which the car can be run to the shutes wherever needed in the works.

(*b*) In a 40-in. circular furnace, 12 ft. high to feed floor, water-jacketted, with six 3-inch tuyures, also with fore-hearth 45 to 55 tons of raw ore are now smelted in 24 hours. As the amount of sulphur in these ores is low, and that in the pyrrhotite not available for fuel, as already it is a natural matte, a typical form of pyritic smelting cannot be used, but more or less fuel is necessary, and a very satisfactory grade of coke is got from Fairhaven, Washington, although it carries from 20 to 24 per cent. ash. A small amount of limestone is added to the charge, but at present a very acidic slag, rather thick, but giving a good separation, is flowing, but very careful handling of the furnace is imperative. The analysis of this slag gives SiO_2, 42 to 46 % ; FeO., 12 to 19 % ; Al_2O_3, 14 to 19 % ; and MgO. 4 to 6 %.

A new 200-ton rectangular blast furnace, made by E. P. Allis & Co., Milwaukee, Wis., after a composite design by Mr. Bellinger and Mr. Wedekind, is being quickly erected. In this furnace 120 x 38 inches at the tuyeres, the steel water jackets will be 5½ feet high ; height to feed door 14 feet, with 14 6-inch tuyeres with thimbles of smaller size that can easily be put in for the purpose of experimenting with the quantity and pressure of blast, for all arrangements are to be such that tests can be made under varying conditions, to determine the greatest possible efficiency for this furnace upon this class of ore. Another feature of this furnace will be that, besides the movable fore-hearth, the bottom or crucible of the furnace will also be mounted, so that if required it can be altogether withdrawn from beneath the water-jackets.

The bluff on which the smelter stands is sand, but the top and face of the dump, 120 feet high, is being covered with slag that flows in sand gutters from the reverberatories, or is wheeled out in the usual slag-pots from the blast furnace ; but in a short time all slag will run from the furnaces into the water troughs, be granulated, and then swept out to the dump, which will be protected from scouring out by the slag covering.

In the engine room is a 65-horse power engine, with a 40-horse power engine now on the way. A No. 5 Root blower is now used, but a No. 7 will be needed when the big blast-furnace is blown in. Power is transmitted by shafting, but mostly by wire cables running over large pulleys to different parts of the works. However, steam power may soon be replaced by electricity, as a plant is to be erected at the foot of the dump and supplied with Pelton wheels and water under a 250-foot head. On a tributary of the Columbia, not far from Trail, a very large water power has been secured by Mr. Heinze, who proposes the installation of an electric plant for the distant transmission of electrical energy which may be brought to the mines, as electricity has now become so successful and economical a factor in mining elsewhere. At present 100 to 120 tons of ore per day are being brought down from Rossland by the tramway, but this amount will be greatly increased. At the smelter, 140 to 160 tons, it is stated by the management (July 29), are being smelted daily, with a concentration of about 20 tons into one ton of matte, which matte goes to Butte to be refined ; but already the foundations for a refinery at the smelter are nearly completed, in which the matte, after being crushed, will be further calcined in a reverberatory to be constructed, and then re-smelted in two of the present reverberatories, after which the product will be treated so as to yield a high grade copper matte for export, from which 80 to 90 per cent. of the gold and silver value has been separated for special refining and parting at these works.

From 175 to 200 men are now employed, and when all these improvements are completed, this smelting plant will be well equipped and capable of handling 350 to 400 tons of ore daily ; and if the demand increases, a still larger plant can easily be added. Again, with the increased means of transport, and the building of roads into other mineral producing districts, access to other classes of ore may greatly better and cheapen the process of smelting.

BROOKFIELD MINING COMPANY, Ltd.

Incorporated 18th January, 1897. Authorized Capital, $500,000, in shares of a value of $50.00.

Directors :

Wilbur L. Libbey, *President.*
Elijah H. Harding. | William S. Tupper.

Mines Office : W. L. Libbey, President, North Brookfield, Queen's Co., N. S.; Robert A. Logan, Secretary.

Owns and operates a gold property containing 104 areas at North Brookfield, Queen's County, Province of Nova Scotia. Average size of vein worked 14 inches yielding about $17.00 per ton milled. Opened by shafts and incline. Equipped with 20-stamp mill and chlorination plant (Thies process) having a capacity of 12 tons daily. Output :—

1896..... 2,975 ozs. 11 dwt. 15 grs. from 4,242 tons rock milled.
1897 ..... 4,667 " 10 " 15 " " 5,351 " "

C. & C. MINING CO.

Incorporated 1896. Authorized Capital, $500,000.

Directors:

M. M. Campbell. | J. H. O'Leary. | D. G. Marshall.

Mines Office: Rossland, B. C.

Owns and operates the C. & C. mineral claim, comprising 13 acres in the Trail district of British Columbia. Being opened up with a small working force at date of report.

CALIFORNIA GOLD MINING CO.

Organized June, 1896. Authorized Capital, $2,500,000, in shares of $1.00.

Directors:

Harold Kennedy. | O. G. Labaree. | Louis Hall. | J. P. Graves.
Charles Wolff.

Officers:

Rufus H. Pope, M. P., *President.*
O. G. Labaree, *Vice-President.* | R. Dalby Morkill, *Sec. and Treas.*

Head Office: Spokane, Wash,

Mines Office: W. Y. Williams, Superintendent, Rossland, B. C.

Owns and operates the California mineral claim, situated in the Trail district, West Kootenay, Province of British Columbia. Opened by shafts and tunnel. Thirty persons employed at date of report.

CANADIAN GOLD FIELDS, Ltd.

Head Office: 3 Lombard St., London E. C., England.

Mines Office: A. J. G. Swinney, General Manager, Deloro, Ont.

Controls and is operating certain mineral claims at Deloro, Hastings County, Ontario, on which, during the season of 1896, extensive works were erected and a large force employed to recover gold from the mispickle ores of the district by the Sulman-seed bromo-cyanide process.

CARIBOO GOLD FIELDS, Ltd.

Registered 1896. Authorized Capital £100,000, in 50,000 ordinary shares of £1 each, and 50,000 preference shares of the like amount. The Preference shares are entitled to a preferential dividend of 10 per cent., and after the ordinary shares have received a like dividend, both classes of shares will rank *pari passu* in the distribution of further profits.

Directors :

Edwin Bonner. | Arthur Cundall. | Robt. M. Meyer. | E. Collins.

Head Office : W. B. Brough, 6 and 8 Eastcheap, London, E. C.

Mines Office : James Champion, C. M. E., Barkerville, B. C.

Formed to acquire and work the gold mining concessions and water rights on Williams' Creek, Cariboo District, British Columbia, of the Whittier Gold Concessions, Ltd., and certain other claims of which an option of purchase has been obtained. The concessions and claims comprise the bed of Williams Creek for a distance of nearly two miles.

The following is excerpted from the report of the Directors submitted at a meeting of the shareholders on 27th July, 1896 :—

"Your directors have now the pleasure of reporting that an Act of Parliament has been obtained from the Legislative Assembly of British Columbia, consolidating the mining leases, mining rights and water rights of the Company for a period of twenty, renewable to forty, years, and which also attaches the water rights to the freeholds belonging to the Company.

"The main pipe line (said locally to be the best ever imported into Canada), is now all delivered at Ashcroft railway station, and contracts have been entered into for its conveyance over the 300 miles of road between that place and the mine, where it will be delivered in ample time for commencing work next spring.

"A smaller pipe line for the working of the Eye Opener claim has also been sent out, and should now have reached the mine. This claim will be worked at once.

"Satisfactory work has been done this spring in completing the works held over during the winter, and there seems little doubt that all the works will be completed before the pipe line is in place.

"You will see from the accounts enclosed herewith that the preference shares issued amount to 20,452.

"The Directors have found it necessary to authorize the issue of £10,000 debentures, bearing interest at 10 per cent. per annum, with bonus on repayment, and of these 8,500 have been issued.

"Considerable expense must necessarily still be incurred before the works are completed, and the Directors, as you will see by the accounts, have contributed largely to meet these expenses in form of open loans to the Company, carrying interest at 10 per cent. They would be pleased to receive offers from any shareholders to join in such advances on similar terms."

BALANCE SHEET, 31ST DECEMBER, 1895.

LIABILITIES.

To Capital Authorized—	£	s.	d.	£	s.	d.
50,000 £1 Ten % Preference Shares.....	50,000	0	0			
50,000 £1 Ordinary Shares.....	50,000	0	0			
	£100,000	0	0			

To Capital Issued--						
50,000 £1 Ordinary Shares issued as fully paid, in part payment of Properties under Agreement of 21st Nov., 1894				50,000	0	0
19,173 £1 Preference Shares	19,173	0	0			
Less Calls due (since paid)	1,179	0	0			
				17,994	0	0
30,827 Unissued.						
100,000						
To 10 % Debentures				5,000	0	0
" T. Piggott & Co., Limited, due for Plant				599	17	6
" R. B. Johnson, Esq., Law Costs due				44	19	0
" R. M. Meyer, Esq., Call paid in advance				144	15	0
				£73,783	11	6

ASSETS.

	£	s.	d.	£	s.	d.
By Purchase of Properties, Water-rights, &c.				54,001	0	0
" Pipe Line Plant	4,176	17	5			
" Sundry Plant	169	1	4			
" Deposit at Lloyd's Bank for Plant	599	17	6			
" Barkerville Salaries paid in London	500	0	0			
" Travelling expenses paid in London	200	0	0			
" Cash remitted to Barkerville and expended as per Schedule attached	11,075	0	0			
" H. C. Beeton & Co.'s Accout	2,465	0	0			
	19,186	16	3			
Less Gold obtained and remited	257	26	7			
				18,927	19	8
" LONDON EXPENDITURE—						
Stationery Account, Barkerville, London	66	10	1			
General Expenses, Registration of Company.	69	14	1			
Petty Cash, Cables, etc	67	4	0			
London office :						
Rent and Salaries	119	10	0			
Law Charges	44	19	0			
Office Furniture	9	19	0			
				377	16	2
" Cash at London and South-Western Bank				476	15	8
				£73,783	11	6

BALANCE SHEET, 30TH JUNE, 1896.

LIABILITIES.

To Capital Authorized—	£	s.	d.	£	s.	d.
50,000 £1 Ten % Preference Shares	50,000	0	0			
50,000 £1 Ordinary Shares	50,000	0	0			
	£100,000	0	0			

To Capital Issued—						
50,000 £1 Ordinary Shares, issued as fully paid, in part payment of properties under agreement of Nov. 21st, 1894				50,000	0	0
20,452 £1 Preference Shares				20,452	0	0
29,548 Unissued.						
To 10 % Debentures				8,000	0	0
" Sundry Loans—						
L. & S. Western Bank	1,000	0	0			
Bonner, E	850	0	0			
Cundall, A	850	0	0			
Collins, E	50	0	0			
				2,750	0	0
" Piggott & Co., Limited, due for Plant				427	1	3
" Income Tax on Debenture Interest				2	6	2
				£81,631	7	5

ASSETS.

	£	s.	d.	£	s.	d.
By Purchase of Properties, Water Rights, &c.				56,447	6	6
" Pipe Line Plant	5,552	18	9			
" Eye Opener, Plant	266	8	11			
" Sundry Plant	165	4	10			
" Barkerville Salaries Paid in London	718	8	8			
" " Travelling " "	200	0	0			
" " Expenditure as vouched to 31st Dec., 1895	11,075	0	0			
" Cash since	5,900	0	0			
	23,878	1	2			
Less Gold obtained and remitted	257	16	7			
				23,620	4	7
" London Expenditure—						
Office Furniture	9	19	0			
Stationery Account	67	9	7			
" Barkerville	29	10	0			
General Expenses, Registration of Company, Bank Charges and Bank Cables, &c	99	19	2			
Petty Cash and Cables	95	2	6			
Office: Rent Salaries	219	10	0			
Law Costs	44	19	0			
Brokerage	23	8	8			
Debenture Interest to 31st Dec., 1895	69	3	4			
	654	1	3			
Less Transfer Fees	7	18	6			
				646	2	9
" Cash at London & South Western Bank				899	0	1
" Beeton & Co., H. C				18	13	6
				£81,631	7	5

CARIBOO HYDRAULIC MINING CO. (Lim. Lia.)

Incorporated 1893. Authorized Capital, $500,000 in shares of $5.

Directors:

O. Plunkett. | J. M. Browning, *President.* | F. C. Innes.
Pierce Lloyd, *Secretary.*

Head Office: 70 Granville Street.

Mines Office: Quesnelle Forks, Cariboo District, B.C,

Manager: J. B. Hobson, M.E., Quesnelle Forks, B.C.

Asst. Manager: L. F. Warner, Jr., M.E., Quesnelle Forks, B.C.

The company's property is located in the heart of the Quesnelle River region, famous for its rich shallow placers and extensive deposits of high grade auriferous gravel. It is situated on the south side of the south fork of the Quesnelle river, 4 miles east of the town of Quesnelle Forks, 4 miles west of the outlet of the great Quesnelle Lake, and about 200 miles north of Ashcroft on the Canadian Pacific Railway, via Cariboo waggon road to 150 Mile House, thence via Forks Road 60 miles to Quesnelle Forks in the Cariboo District, B.C. It comprises eight mining leases, aggregating 426 acres of land, which cover the auriferous deposits of an ancient river, separated for a considerable distance from the modern deep and canon-like gorge of the South Fork of the Quesnelle river by a bedrock ridge that forms the north rim of the ancient river channel, which is filled to a depth of 400 feet with a heavy deposit of high grade auriferous gravel. Near the lower end of the property on the outlet of the channel at Dancing Bill Gulch, successful hydraulic mining on a small scale with 5-inch pipes and 1½ inch nozzles was carried on by Chinese companies for a period of about 18 years. About an acre of gravel, 300 ft. deep, was excavated by the Chinese miners, without reaching bedrock or bottom of the channel.

The water is delivered through a system of canals 7 ft. by 13 ft. by 3 ft. deep, 21 miles in length from the mine to the source of water supply at Six Mile Creek, the outlet of Polleys and Boot Jack Lakes, which have a storage area of about 2,200 acres, and have been converted into storage reservoirs by the construction of substantial dams, 8 feet high, across their outlets. This supply is augmented by the water of Dancing Bill Gulch, and numerous streams on the line of the main canal, which insures a supply varying from 2,000 to 3,000 miner's inches of water throughout the season.

The water is delivered at the mine on the floor of the present excavations under a head of 300 feet, and 400 feet at the bedrock or bottom of the channel.

The mine is equipped with a portable Hydraulic Plant, consisting of three lines of 22 inch, and one line of 18 inch steel pipes, aggregating about 6,000 feet in length, also six No. 8 hydraulic Giants, having nozzles varying from 5 to 10 inches in diameter.

The gold saving appliances consist of a system of sluices, 3 x 5 feet in Pit No. 1, and 3 x 6 feet in Pit No. 2, both paved with improved longitudinal iron riffles.

Undercurrents, intended for the recovery of fine gold, will be placed below the sluices as soon as the mine is sufficiently opened to accommodate their installation.

During the progress of the work of equipment and installation of the heavy plant and opening the two working pits in the upper gravels, extending over the seasons of 1894, 1895 and 1896, the sum of $194,052 in gold was recovered from the gravel, earth and land slides removed from the excavations,

Two working pits are now opened in the upper gravels, banks of which are about 300 feet in height. The floor of the working pits is about 100 feet above the bottom of the channel. This lower bench of high grade gravel will be opened and worked as soon as the upper workings are carried forward a sufficient distance to leave the lower workings safe from the danger of caves from the upper workings.

The following is excerpted from the accounts submitted at the annual meeting 10th March, 1897 :—

CAPITAL ACCOUNT.

RECEIPTS.

Paid up Capital Stock, 100,000 shares at $5 each	$ 500,000 00

EXPENDITURE.

Mine purchases and leases	$180,704 10	
Moorehead ditch survey	534 38	
Ditches and equipment of mine	163,258 70	
Dams, sluices, flumes, sand boxes, etc	11,324 33	
Reservoirs	10,063 98	
Mine labor, etc	24,901 00	
Buildings	5,182 73	
Hydraulic plant	3,753 99	
Melting and lighting plant	44 78	
Saw mill	2,465 25	
Road and trails	3,688 50	
Pasture lands	1,001 05	
Horses and waggons	2,531 67	
Transportation	2,485 96	
Furniture	553 70	
Operating	3,171 57	
Management	2,500 00	
		$418,165 69
Head office and general expenses to March, 1895		5,757 14
		$424,922 83
DEDUCT :—Gold procured in 1894 during preliminary work in opening mine		5,161 85
		$418,760 98
Balance carried to General Balance Sheet		81,239 02
		$500,000 00

PERMANENT IMPROVEMENTS, SEASON 1896.

DR.

To balance carried to General Balance Sheet	$58,132 09

CR.

Lands and leases	$ 169 75	
Buildings	1,857 09	
Dams	2,849 58	
Flumes, sand boxes, etc	2,357 47	
South Fork ditch extension	22,075 75	
" " permanent improvements	4,583 50	
Portable hydraulic plant	14,432 00	
	49,325 14	
Carried forward		$49,325 14

Brought forward		$49,325 13
Furniture	47 10	
Live stock	3,309 30	
Waggons, harness, etc	2,694 50	
Roads, trails, etc	728 45	
Melting utensils	1,124 90	
Telephone	1,902 70	
		$58,132 09
		$58,132 09

OPERATING ACCOUNT, EXPENSES OPERATING MINE SEASON, 1896.

DR.

To Gold recovered from mine during season 1896, after deducting transportation expenses, insurances and other charges	$124,026 86

CR.

Management	$ 3,150 25	
Prospecting	1,823 20	
Mining, Labor and Explosives	53,656 61	
Maintenance of Flumes	43 00	
" Ditch	7,327 42	
" Sluices	11,053 56	
" Hydraulic Plant	3,001 10	
" Lighting and Melting Plant	627 90	
" Saw Mill	1,189 95	
" Waggons, Harness, etc	369 15	
" Roads and Trails	521 35	
" Tools and Implements	633 33	
" Camp	2,247 47	
Forest Fires	4,754 30	
Leases and Water Rights	450 00	
Quicksilver	717 00	
Stationery and Printing	159 12	
Telegrams and Postage	140 32	
Travelling Expenses	4,461 91	
Insurance	818 63	
		$ 97,145 57
Balance carried to General Balance Sheet		26,881 29
		$124,026 86

GENERAL BALANCE SHEET, 31ST DECEMBER, 1896.

DR.

Balance from Capital Account		$ 81,239 02
" Operating Account, 1895	$ 16,385 25	
" " " 1896	26,881 29	
		43,266 54
Outstanding drafts from mine		4,673 93
Profit on Lumber, etc., 1895 and 1896		2,346 21
		$131,525 70

	Cr.		
Head Office and General Expenses, to December, 1895..	$ 1,674 85		
" " " " 1896..	8,505 42		
			10,180 27
Permanent Improvements Account " 1896 .			58,132 09
Personal Accounts outstanding			1,014 56
Stores on hand	31,365 03		
Lumber on hand	5,358 60		
Tools, etc., on hand	4,701 50		
Quicksilver on hand	1,816 70		
			43,241 83
Bank of Montreal, cash in bank at Dec. 31, 1896			18,956 95
			$131,525 70

CARIBOO MINING MILLING AND SMELTING. CO

Organised 10 March, 1888. Authorized Capital $800,000 of a par value of $1.00.

Directors :

Jas. Monaghan. | G. B. McAulay. | M. M. Cowley. | C. P. Chamberlin.
Edward O'Shea.

Head Office :

G. B McAulay, *Secretary*, Eagle Block, Spokane, Wash.

CANADIAN OFFICE :

Jas. Monaghan, President, Camp McKinney, Yale District, B.C.

Owns and operates the Cariboo and Amelia claims at Camp McKinney, District of Yale, Province of British Columbia. Average size of vein worked, four feet, yielding about $19 per ton. Opened by three shafts at date of report, 70 ft., 50 ft., and 180 respectively, and by one tunnel 1,200 ft. Equipped with 10-stamp mill (steam) Knowles & Cameron pumps, Ball hoisting engines (2), three boilers, Blake ore breaker, and other machinery. Balance sheet under date 1st Feb., 1897, shows :—

Capital stock		$ 800,000 00
Water rights and mines	$ 800,000 00	
Dividends unpaid		34 00
Dividend account	124,964 76	
Expenses account—general	12,780 17	
Mill account	17,352 62	
Labor account	81,630 73	
Mine and mill supply account	23,358 40	
Personal property	354 51	
Rent account		2,345 28
Mineral tax	491 96	
Bullion account		273,342 49
Building account	425 73	
Amelia mining claim		26,230 20
Profit and loss	8,700 00	
Treasurer's account	31,893 09	
	$1,101,951 97	$1,101,951 97

CARIBOU GOLD MINING CO. Ltd.

Incorporated by an Act of the Legislature of Nova Scotia, 1894.
Authorized Capital, $500,000.

Directors:

Hon. David McLennan, St. John, *President*,
Nathaniel Curry, Amhurst. | Hon. A. C. Blair, M.P., St. John.
A. G. Cunningham, Halifax. | J. Lester Jennison, New Glasgow.
Hon. J. W. Longley, Halifax. | J. Fenwick Fraser, St. John,

Head Office: A. G. Cunningham, Sec.-Treas. P. O., Box 102, Halifax.

J. Fenwick Fraser, St. John, N.B., Managing Director.

The property comprises certain gold mining areas in the Caribou district, County of Halifax, N.S.
Roderick Macleod, *Manager*, Caribou Mines, Halifax Co., N.S.

CENTRAL RAWDON MINING CO., Ltd.

Incorporated 1890. Capital, $120,000 in shares of $100 each, fully subscribed and paid.

Directors:

Clarence H. Dimock, *President*, Windsor, N.S.
Wm. O'Brien, Windsor, N.S. | J. C. Geldert, Windsor, N.S.

Head Office: J. C. Geldert, Secretary, Windsor, Hants Co., N.S.

The company holds from 150 to 200 gold areas under lease from the Government of Nova Scotia. The mines, which are at Rawdon, are equipped with 15 stamp mill, hoisting and pumping gear and other machinery worked, but no report of operations in 1896 received.

CENTRE STAR MINING AND SMELTING CO., Ltd.

Incorporated 16th July, 1895. Authorized Capital, $500,000 in shares of $1.00.

Officers:

P. A. Largey, *President*. | Geoffrey Lavall, *Vice-President*.
T. M. Hodgins, *Treasurer*. | W. G. Benham, *Secretary*.
Oliver Durant, *General Manager*.

Directors:

P. A. Largey. | Sir Charles Ross. | A. H. Tarbet. | Oliver Durant.

Canadian Office: Oliver Durant, Trail, B.C.

Formed to carry on mining in British Columbia. Owns and operates the Centre Star and Idaho mineral claims, comprising an area of about forty acres at Trail Creek, West Kootenay, Province of British Columbia. Across the east end of the Centre Star claim, runs in a northerly direction Centre Star Gulch, on the east side of which in a diorite bluff is exposed a ledge 30 to 50 feet wide covered with the heavy iron-stained rock or true iron-capping from the decomposition of the sulphides here present in mass. On either side of this ledge is a smaller one. The main tunnel enters on the outcropping of this main ledge on the west side of the gulch and runs S.W. about 1,100 feet along the lead, heading for its objective point, the Le Roi east end line. Several large bodies of low grade ore are traversed, one of nearly massive sulphides or pyrrhotite being 147 feet long and 14 to 16 feet wide, while another is nearly 70 feet wide. From this tunnel cross-cuts are being run to the side lines, and in one to the north, the "north vein" was cut at 280 feet, where it is 4 to 6 feet wide of good ore, with a larger percentage of copper than is found elsewhere in the mine. At 180 feet in the cross-cut to the south, the "south vein" was cut but there it is small. Mr. Durant states that besides the large amount of low grade ore now in sight, there is much good shipping ore, but none will be shipped until the mine has been thoroughly explored and opened up for work and the conditions for shipping and smelting are the best. Already nearly 2,000 feet of work have been done, and the ore taken out is being stored in a large dump for future use. There is at the tunnel-mouth a good blacksmith shop and engine room, in which is a 7-drill Ingersoll-Sergeant air compressor and an 80-h.p. boiler, now running three drills in the mine with which 1,600 feet of work have been done since December 5th, 1895. Ventilation is secured by running pipes fitted with compressed air exhausts from the face of work to a shaft sunk on the lead and tapping the tunnel 410 feet from the mouth. After further work has been done a large shaft will be sunk, and a heavy hoisting plant put in, probably near the west end of the claim, and both railways will be easily available. Work will also be done soon to exploit the Idaho ground into which the large exposure mentioned leads, and has been traced through into the Enterprise claim on the east. Number of men at work, 23.

CHANNE MINING CO., Ltd.

Incorporated 1896. Authorized Capital, $1,000,000.

Directors:

P. N. Smith. | Joseph Sheasgreen. | G. W. Willis. | Gordon Drysdale.
A. C. Brydone-Jack.

Head Office: Percy N. Smith, Vancouver, B.C.

Owns and operates a mineral claim on Valdez Island, in the Shoal Bay District, Province of British Columbia. Being opened up by tunnels and shafts. Smelter returns from a trial shipment gave $31.00 in gold to the ton.

CLIFF GOLD MINE.

Owners:

S. M. Wharton. | G. C. Wharton. | J. R. Cook. | E. T. Late.

Head Office: Rossland, B.C.

This mine is located in the Trail District, Province of British Columbia. A well-defined lead is believed to run through the St. Elmo Consolidated, St. Elmo and the Monte Cristo. About the centre of the claim is a 45 foot shaft, full of water, with several tons of ore at the top, and below in the hillside several open cuts along the ledge from which there has been taken high grade ore. The lead can be easily traced through the claim, but the faults met with in the underground workings show plainly at the surface. In a tunnel 350 ft. long, with 100 ft. of cross-cuts, there is for the first 90 ft. solid ore, low grade, averaging 4 ft. wide, then a slip throws the ore 20 ft. to the northwest, the shute then continuing for 65 ft., beyond which it is much broken up and a small stringer of ore 2 to 10 inches wide is found running east and west. One hundred feet lower down is tunnel No. 2, now being driven ahead with a machine drill. For 65 ft. the tunnel is all in the coarse grained pyrrhotite assays a few dollars in gold, with a fault of 5 feet to the north and the continuation of this shute for 90 feet further, being in places 12 feet wide, but also low grade. Faults are now met with, beyond which the ore has not yet been found. At the upper or west end of the claim it is claimed the best ore has been found, and tunnel No. 2 will be run through to develop this ground.

COMMANDER MINING AND SMELTING CO.

Incorporated 1896. Authorized Capital $1,000,000.

Officers:

W. J. Harris, *General Manager.* | Frank Watson, *Secretary.*

Mines Office: Rossland, B.C.

Owns and operates the Commander mineral claims, comprising 52 acres, and situated 1¼ miles S. E. of the town of Rossland, Trail District, Province of British Columbia, on which development is proceeding.

CONSOLIDATED ALBERNI GOLD MINING CO., Ltd.

Incorporated 1896. Authorized Capital $500,000.

Directors:

J. Dunsmuir. | B. H. John. | H. Saunders. | D. Oppenheimer.
Thomas Dunn.

Head Office: Victoria, B.C.

Mines Office: Alberni, Vancouver Island, B.C.

Owns and operates the "Alberni," "Warspite," "Victoria" and "Chicago" mineral claims at Aberni, Vancouver Island, Province of British Columbia. Being opened up.

CROWN POINT GOLD MINING CO., Ltd.

Incorporated 1896. Authorized Capital, $1,000,000, in shares of $1.00.

Directors :

George Gooderham. | Thos. Blackstock. | G. A. Stimson. | J. A. Finch.
D. D. Williamson.

Mines Office : Rossland, B. C.

Owns and operates the White Swan and Hidden Treasure locations, situated two and a-half miles southeast of the Town of Rossland, Trail District, West Kootenay, Province of British Columbia. No information having been furnished by the company, we are indebted to Mr. W. A. Carlyle, M. E., Provincial Mineralogist, for the following description of the workings in his report on the Trail District:—

"Until last April the Crown Point was under different management, under whose direction a shaft or incline, dip about 50°, was sunk 130 feet, encountering at 60 feet a dyke, which is now clearly shown upon the surface as 30 to 40 feet wide, strike north and south, dipping to the east 60°. Owing to bad air and water it was impossible to inspect the lower workings, but they were described as consisting of a drift at the depth of 70 feet, for 90 feet along the dyke, having, for 60 feet, ore, while at 50 feet a wing was sunk 20 feet, again along the wall of the dyke, at the bottom of which it is claimed there were 4 feet of solid sulphides. At the bottom a drift was run west 100 feet with a cross-cut 50 feet, and an east drift of 75 feet, with a 50-foot cross-cut, all in barren diorite, the workings having probably been deflected from the ore zone by following along the dyke. On the surface on either side of the dyke, apparently with little or no displacement, is exposed, when the iron capping is removed, a body of sulphide ore, or massive pyrrhotite with some copper pyrites, from 3 to 8 feet wide, strike, a little north of west, dip S. into the mountain 45° to 60°, the enclosing country rock being a fine grained diorite, so common in the claims along this slope. At the top of the shaft the ore is about 7 feet wide, and down it for 35 feet it is 3 to 5 feet wide, while it is fully 7 feet wide where it is being stoped out."

CRYSTAL GOLD MINING CO. OF RATHBURN, Ltd.

Incorporated 1894. Authorized Capital, $1,000,000, in shares of $100.

Directors :

Hon. Peter White, Pembroke, Ont.
Alexander Barnet, Renfrew. | Thos. Hale, Pembroke. | Jas. B. Klock, Klock's Mills.
R. McConnell, Mattawa.

Head Office : W. R. White, Secretary-Treasurer, Pembroke, Ont.

Rinaldo McConnell, *Managing Director*, Mattawa, Ont.

Owns and operates a gold mining property at Lake Wahnapitae. Milling plant erected in Spring of 1897, and mining proceeding.

DEER PARK MINING CO.

Incorporated May, 1896. Authorized Capital, $1,000,000, in shares of a par value of $1.00.

Directors :

L. W. Mulholland. | J. F. Reddy. | P. A. O'Farrell. | E. J. Kelly.
Ben. C. Mickles.

Head Office : R. L. Rutter, Sec.-Treas., 302 Rookery Building, Spokane, Wash.

Mines Office : E. J. Kelly, Superintendent, Rossland, B. C.

Owns and operates a gold location comprising 52 acres, and situated on the east side of Deer Park Mountain, 1¼ miles southwest of the town of Rossland, Trail District, Province of British Columbia. On this property is one of the largest bodies of sulphides in the district, the vein worked being reported by the management to be 48 feet, giving an average value in gold and copper of $23.00 per ton. Opened by shaft 118 feet and other workings. Equipped with Rand air compressing plant, hoisting and pumping machinery, etc.

DELACOLA GOLD MINING CO., Ltd.

Incorporated 1896. Authorized Capital, $1,000,000 in shares of $1.00.

Directors :

G. W. Myers. | E. W. Johnson. | R. Thomson. | John Donahoe.
George Herring.

Head Office : Harold Kingsmill, Secretary, Rossland, B.C.

Owns and operates the Delacola claim, comprising 37 acres, situated 1½ miles north of the town of Rossland, Trail district, Province of British Columbia. Being opened up.

Con. Cosgriff, *Mine Superintendent.*

DOMINION GOLD MINING AND REDUCTION CO., Ltd.

Incorporated 1895. Authorized Capital, £200,000, divided into 200,000 ordinary shares of £1 each.

Directors:

Somerset F. Gough-Calthorpe. | E. Allen Robinson. | Hon. M. W. Elphinstone.
Count Oscar Von Reichenbach | G. A. Jones.
A. Marshall Hay, *Chairman.*

CANADIAN OFFICE:

A. Marshall Hay, Rat Portage, Ont.

Head Office:

F. W. Croucher, *Sicretary*, Portland House, 73 Basinghall Street, London, E.C.

The company owns and operates the undermentioned properties in the Lake of the Woods district, Province of Ontario:—

The Reduction Works at Rat Portage.....				about	2 acres.
Mining Location X 90		known as	Black Jack.....	"	320 "
"	I 11	"	I XI.....	"	27 "
"	K 76	"	Excelsior	"	99 "
"	P175	"	Jerusalem	"	85 "
"	K 70	"	Gold Hill.....	"	90 "
"	P193	"	Golden Slipper.	"	20 "
"	P192	"	192 P	"	51 "
"	P191	"	Judge Mills....	"	227 "
"	P190	"	Combination...	"	220 "
"	P194	"	Golden Gate...	"	75 "
"	P298	"	Sultana Jr.....	"	25 "
"	K100	"	K 100.....	"	80 "
"	P188	"	Elphinstone Mine	"	95 "
"	P23	"	Yellow Girl....	"	17 "

The company also owns a controlling interest in the Homestake Mining Company of Algoma (151,000 shares of $1.00 each out of a total share capital of $300,000) and a one-third interest in the Queen of Sheba Mining Location (about 170 acres), both situated in the same district.

The Reduction Works, which are situated within the town limits of Rat Portage, embrace about two acres of freehold land, having dock frontage on the Lake of the Woods, and connection by siding with the Canadian Pacific Railway. They have been equipped with 20 stamps of the most improved type, and a complete outfit of milling machinery, including two ore breakers, frue vanners, Krupp concentrating tables and Colorado "Perfection Concentrators," automatic samplers, etc., etc. A chlorination plant (including roasting furnaces, etc., of sufficient capacity to deal with the concentrates of the district), and a cyanide plant of large capacity, are partially constructed and can be completed at a very moderate expenditure.

At the first annual meeting of the company held on 31st December, 1896, the following accounts were submitted:—

BALANCE SHEET, AUGUST 31ST, 1896.

DR.

	£	s.	d.	£.	s.	d.
To Authorized Capital	200,000	0	0			

	£ s. d.	£ s. d.
Capital Issued—		
To Vendor as fully paid	150,000 0 0	
Subscribed	18,707 0 0	
		168,707 0 0
To Loan		2,000 0 0
" Sundry Creditors		565 17 1
" Bullion received from Mines		233 19 6
" Transfer Fees, &c		0 16 0
		£171,507 12 7

Cr.

	£ s. d.	£ s. d.
By Purchase of Mines		161,576 0 8
" Office Furniture, at cost		80 0 0
" Machinery and Plant, at cost		5,260 17 5
" Stores on Hand		276 4 0
" Exploring and Development Account		1,852 17 0
" Preliminary Expenses Account		428 3 11
" Sundry Debtors		230 1 0
" Cash at Bankers	£ 79 19 11	
" " in Hand	3 19 11	
" " at Mine	144 10 6	
" Bullion at Mine, estimated	92 11 10	
		321 2 2
" Insurance Account		127 10 3
" Interest Account		75 6 6
" Reduction Works Account		120 4 2
" Gold Hill Mill Account		95 8 3
" Salaries, Taxes and Management Expenses at Mines		599 5 3
" Salaries, Rent, Stationery, Cablegrams and Sundries, London Office		464 12 0
		£171,507 12 7

DUFFERIN GOLD MINING CO.

In the fall of 1896 the property owned by the company was transferred to a private syndicate, and is now being re-opened with a view to further working.

Head Office: R. G. Leckie, Torbrook, N. S.

Mines Office: Salmon River, Halifax Co., N. S.

The Dufferin mines of the company are situated in the Darrs Hill District, four and a-half miles from the village of Salmon River, in the County of Halifax, Province of Nova Scotia. The distance by water to Halifax is about 70 miles, by road 90 miles, and by a good waggon road to Shubenacadie, the nearest station on the Intercolonial Railway, 68 miles. The fee simple rights cover about 1,000 acres. The property on which mining rights are held is in two blocks. The one on which the mines are situated comprises 342 gold areas, each 150x250 feet, making an aggregate

of 8,550 feet in length on the gold belt, and 1,500 feet across it. The other block containing 14 areas further south. (For history of discovery of this productive property see *Canadian Mining Manual*, 1893.)

After paying over $150,000 in costs for litigation, which lasted continuously for more than nine years, and which finally ended before the Privy Council, and paying for all lands, machinery, construction works and equipments, all expenses, including labor and management, the owners had received up to 1887 in net profits over $300,000.

The machinery equipment comprises a 20-stamp mill driven by a Little Giant turbine of 96 h.p.; stamps drop 95 per min., weight 850 lbs.; automatic Hammond feeder, capacity, 60 tons per 24 hours. There is a wire transmission of a distance of 4,067 feet, driven by Vulcan 52 in. wheel of 146 h.p., operating plunger pumps, four suction pumps, Blake rock breaker, etc. Opened by 13 shafts, the deepest of which is 300 feet. Underground works aggregate between 1,700 and 1,800 feet.

EAST WAVERLEY TUNNEL CO.

Owners :

T. R. Gue, Halifax, N. S. | B. C. Wilson, Waverley, N. S.

Head Office : Metropole Building, 193 Hollis St., Halifax.

Owns a gold mining property known as Laidlaw's Hill at Waverley, in the County of Halifax, Province of Nova Scotia. A cross-cut tunnel has been driven a distance of 635 feet, cutting at that point the Barrel quartz lode, at a distance of something like 200 feet on the incline below the outcrop. The vein has been opened systematically by levels and upraise, and everywhere shows a large body of quartz. Development has demonstrated that the Barrel lode, after bending around the hill, takes the true course of the lodes of the district, and assumes its normal conditions, being over 2 feet wide. It became necessary to remove several hundred tons of the lode to permit laying the tramway in the levels. This ore was crushed in stamp mills and yielded over one-half ounce of free gold per ton. Development to date shows over 30,000 tons of ore in sight. The owners intend bringing the power from Fletcher's Lock to operate both mining and milling plant, to be erected in the near future.

THE ELK GOLD MINING CO. OF CARIBOU, NOVA SCOTIA.

Capital, $300,000. Shares $1.00 each.

Directors :

Fredk. Prince. | Ernest H. Gladwin. Jos. J. Smooke. | T. G. McMullery. Robert Wright. | Geo. Stuart.

Head Office : Halifax, N. S.

Formed to carry on mining in the Province of Nova Scotia. Owns and operates a gold property in the Caribou district, Province of Nova Scotia.

ENTERPRISE GOLD MINING CO.

Authorized Capital, $1,000,000.

Head Office: W. A. Ritchie, General Manager, Spokane.

Mines Office: Rossland, B.C.

Owns and operates the "Enterprise" mineral claim on Monte Cristo Mountain, Trail District, Province of British Columbia. Being opened up with a small working force at date of report.

ERIC GOLD MINING CO., Ltd.

Incorporated 1896. Authorized Capital $1,000,000.

Directors:

F. W. Rolt. | E. Bowers. | Jas. Hunter. | W. H. Lancaster.
W. A. Cambpell.

Head Office: Edward Baillie, Secretary, Rossland, B.C.

Owns and operates the Eric mineral claim, situated on Monte Cristo Mountain, near Rossland, Province of British Columbia, comprising forty-six acres. Being opened up at date of report

George Pfunder, *Mine Superintendent.*

EVENING STAR MINING CO.

Incorporated 1895. Authorized Capital, $1,000,000, in shares of a par value of $1.00.

Directors:

D. M. Drumhellar, *President.*
H. B. Nichols. | J. L. Drumheller. | S. S. Bailey. | W. E. Blackmer.
D. G. Russell. | J. W. Glover.

Head Office: W. E. Blackmer, Secretary, Spokane, Wash.

Mines Office: H. B. Nichols, Managing Director, Rossland.

Owns and operates the "Evening Star" claim, comprising 20 acres, located on the east slope of Monte Cristo Mountains, about one mile north of the Town of Rossland in the Trail mining district, Province of British Columbia. Average size of vein worked, 3 feet, smelter runs from which gave 21 tons of a value of $33.80, 8 tons $26.00, and 13 tons $25.00. Being opened up.

EXCHEQUER GOLD MINING CO., Ltd.

Incorporated September, 1896. Authorized Capital, $1,000,000 in shares of $1.00.

Officers :

John Flett, Toronto, *President.*
Aaron H. Kelly, Nelson, *Vice-President.* | James Watt, Toronto, *Treasurer.*
J. C. Drewry, Toronto, *Secretary.*

Directors :

John Flett. | Jas. Watt. | R. L. Patterson. | Wm. Stone. | H. Lowndes.
A. H Kelly. | W. F. Teetzill. | Geo. Richardson. | R. F. Lennie.
W. J. Nelson. | J. C. Drewry.

Mines Office : Nelson, B.C.

Owns and operates two mineral claims, the "Exchequer" and "Cleopatra," comprising 90 acres on Toad Mountain, Nelson division of West Kootenay, Province of British Columbia. Being opened up. To be equipped with 10-stamp mill and concentrating plant in 1897.

FOLEY MINES CO. OF ONTARIO, Ltd.

Incorporated 29th November, 1896. Authorized Capital, $1,000,000 in shares of a par value of $5.00.

Directors :

Rod. A. Demmé.
Hon. Lyman Melvin Jones. | S. S. Babcock. | Thos. J. Hurley.
W. H. Cawthra.

Head Office : Edmund Bristol, Secretary, 103 Bay Street, Toronto.

Mines Office : "Foley," Seine River, Ontario, via Tower, Minnesota.

J. C. Foley, *Manager.* | Robert Flaherty, *Superintendent.*

Owns and operates mining sections A.L. 74, comprising 42 acres ; A.L. 75 comprising 41 acres ; A.L. 76 comprising 108 acres in the Rainy River District, Province of Ontario. Sixty persons employed in 1896. The principal veins worked are known as the "Bonanza," "No. 5," "Lucky Joe," "Jumbo," "No. 7," and "No. 9." The mine is opened as follows :—

Vein.	Location.	Size of Shaft.	Depth.	Width. of Vein.
Bonanza	A.L. 74	8 x 12	210 feet.	26 inches.
No. 5.....	" 75	6 x 9	113 "	19 "
Lucky Joe	" 75	6 x 9	39 "	14 "
No. 8.....	" 74	6 x 8	31 "	54 "
No. 3.....	" 74	6 x 8	10 "	42 "
No. 6.....	" 74	6 x 8	12 "	18 "
No. 1.....	" 75	6 x 8	17 "	40 "
No. 2.....	" 75	6 x 8	14 "	16 "
No. 4.....	" 75	6 x 8	19 "	24 "
No. 7.....	" 76	6 x 8	11 "	23 "

At 1st February, 1897, the workings comprised :—

Total depth of shafts, 469 feet ; total length of drifts, 610 feet ; total depth of winzes, 125 feet ; total length of cross cutting, 109 feet. Total amount of underground development work, 1313 feet. The total expenditure on the property, including purchase of claims, machinery and equipment, and in development to date, is stated to be $211,000. An itemized statement under 8th February, shows expenditure on buildings and machinery : No. 1 engine house, 40 ft. x 36 ft., $500; one 40 h.p. boiler, 14 ft. x 36 ft., $850 ; one 20 h.p. boiler, 10 ft. x 12 ft., $325 ; one double drum hoisting engine and three drill compressors, $12,000 ; 4,400 ft. of trestle work tram-road, $3,000 ; No. 11 engine house, 26 ft. x 36 ft., $350 ; one hoisting engine, 56 in. drum, $1,000 ; north shaft house and skip road, $1,000 ; one skip and six cars, $425 ; 20 stamp mill (Fraser and Chalmers complete), with assay office including duty, ($3,764) $29,500 ; blacksmiths' shop, 24 x 36 ft., $250 ; barn 28 ft. x 32 ft., $240 ; boarding house, $1,400 ; two storey office, 6 rooms, $340 ; six dry houses and sleeping camps, $450 ; or a total of $57,480.

43rd MINING AND MILLING CO. OF OMENICA, Ltd.

Incorporated 1896. Authorized Capital, $600,000.

Trustees :

Lt.-Col. Wright. | Capt. W. A. Jamieson. | Capt. M. N. Garland.
F. W. Valleau, C. E. | J. S. Holloway.

Directors :

N. C. Sparks, Ottawa, *President.*

Wm. McGillivray,	Ottawa.	Thomas Kenny,	Ottawa.
Capt. S. M. Rogers,	"	Capt. H. Watters,	"
Major A. P. Sherwood,	"	Lieut. S. E. DeLaRonde,	"

Head Office : Capt. S. M. Rogers, Sec.-Treas., 97 Sparks St., Ottawa.

Mines Office : Joshua Wright, Manager, North Bend, B. C.

This company has been formed for the purpose of working and developing the following auriferous bench diggings and creek diggings situated on Manson and Slate Creeks, in the Omenica division of the Cariboo District, British Columbia, containing 720 acres of bench diggings and three miles of creek diggings, and recorded as leases No. 55-563-4-5-6-7-8-9-70-1-2-3-4-5-6-7—15 leases in all ; 9 bench diggings and 6 creek diggings. The following report was submitted at the last meeting of shareholders under date 21st October, 1896, by Mr. A. F. Cotton, the engineer in charge of the work :—

Since submitting to you my report dated July 30th, we have completed the dam, the trestle for 5,700 feet of flume, and built 3,000 feet of ditch, the detail of which is given further on. The saw-mill is completed and ready for work; logs amounting to about 30,000, B.M., are piled on skidway at the mill, so that sawing can be commenced as soon as the spring opens.

The final location of ditch line is made, and construction can be gone on with as soon as the party arrive. There are five ravines to be crossed, but as the largest is only about 200 feet long and 35 feet deep there are no long or high trestles to be built.

The grades adopted are: for the ditch, 8 feet to the mile, and for the flume, 10 feet to the mile.

The dimensions of the ditch are as follows: bottom, 4 ft.; depth, 3 ft.; top, 10 ft. In the construction of same the dirt moved was used to form an embankment on the lower side, thus greatly increasing the capacity.

The trestle for the flume is composed of bents every 10 feet; the box will be 6 ft. wide and 3 ft. deep, but can be increased to 4 ft., should occasion demand it.

The saw-mill is at present located at the confluence of the South branch and Manson Creek. The water is fed to it through a ditch and flume 1,000 feet in length; it is 2 feet wide, 1 foot deep, with a head of 37 feet.

The dam is 90 feet long, 6 feet high, base 16 feet, filled with rock; a waste-gate 10 feet wide is built in it, and the water taken into the flume through a gate 5 feet wide. The ditch is connected with the dam by a flume 50 feet long, in which a waste-gate and apron is constructed.

The water taken from Manson Creek, together with the small streams along the ditch line (of which there are several), will, I am certain, always furnish a good supply.

Timber—there is ample for all work required. It is chiefly spruce and jack pine of a fair size, and at a short distance above the ditch line. If a dry chute or slide is built it can be cheaply taken out and floated to any point desired.

The total number of cubic yards of dirt moved in the construction of the ditch amounts to 10,186, costing twelve and eight-tenth (12 8-10 c.) cents per yard.

The number of feet timber, B.M., used in the construction of the trestle amounts to 75,616, costing $18.44 per M., B.M. This trestle consists of 570 bents at a cost of $2.44 a bent.

In the construction of the dam 39,817 feet, B.M., was used, also 100 cubic yards of rock, the whole costing the sum of $261.00.

The total length of ditch from the dam to Slate Creek is 24,400 feet, nearly 4¾ miles.

Piping can be commenced as soon as station 190 is reached, and as the ditch is completed as far as station 95 there remains but 9,500 to be built before actual mining can begin. Of this, 6,500 will be ditch and 3,000 flume. This will take us to the height of land between Kildare Gulch and Slate Creek. From here, both Kildare Gulch and a portion of Manson Creek can be worked.

The ground from here to Slate Creek is very favorable for ditching; two or three small ravines are the only places where a flume is required.

The ditch is at such an elevation that you will have 200 feet head at Kildare Gulch, and over that on Slate Creek.

The total length of line remaining to be built amounts to 11,900 feet of ditch, containing about 30,000 cubic yards, and the estimated cost about $3,840.00. Of flume there remains 9,700 feet, at a cost of $11,480.00; making a total of $15,320.00."

The accounts for the year ending 31st January, 1897, are as follows :—

RECEIPTS.

78,500 Shares Stock @ 25 cents	$19,625 00
480 " " " 50 "	240 00
Carried fyrward	$19,865 00

Brought forward		$19,855 00
Less 18,000 Shares @ 25 cents	$4,500 00	
" 1,250 " " 25 " (second call)	625 00	
" 70 " " 50 "	35 00	
		5,160 00
		$14,705 00
Ottawa Bank, notes discounted		7,000 00
		$21,705 00
Lt.-Colonel Wright's statement		28 90
		$21,733 90

DISBURSEMENTS.

Lt.-Colonel J. Wright's statement	$13,597 00
Capt. S. Maynard Rogers' statement	6,946 36
	$20,543 44
By Balance on hand	1,190 46
	$21,733 90

ASSETS.

Book debts		$ 220 89
Goods on hand—as per inventory		2,154 94
Plant and tools		4,607 07
Saw mill and machinery		2,328 74
Five licenses		25 00
Cash on hand and in bank		1,190 46
		$10,527 10
Treasury Stock	$200,000 00	
Less sold	78,980 00	
		121,020 00
Franchise and Claim, (5 miles of creek claims, 1,040 acres of bench claims)		259,115 00
Shareholders' shares unpaid		5,160 00
		$395,822 10
Balance charged to construction account		14,832 29
		$410,654 39

LIABILITES.

Capital Stock		$400,000 00
Salaries and Wages—A. F. Cotton	$7 05	
John Wright	4 50	
E. Sturdevent	113 25	
E. Goodall	126 39	
		251 19
Open Accounts—Jas. Reid	$3,177 99	
Hudson Bay Co	225 21	
		3,403 20
Ottawa Bank, notes under discount		7,000 00
		$410,654 39

NOTE—200,000 shares are held as Treasury Stock.

FRASER RIVER GOLD MINES, Ltd.

Registered 1896. Authorized Capital, £10,000 in 40,000 shares of 5s. each, of which 20,000 shares were allotted to the vendor in part payment of the purchase price.

Directors:

Somerset F. Gough-Calthorpe.
John Fraser. | E. Allen Robinson. | Walter Pears.

Head Office: Thos. Moody, Secretary, 9 Gracechurch St., London, E.C.

Formed to acquire and work the gold mining claims known as Lyall Bar and Saw Mill Flat, situated on the Fraser River, in the Cariboo district, Province of British Columbia. The purchase consideration was £8,000, payable as to £5,000 in fully paid shares, and as to £3,000 in cash, leaving £2,000 available for working capital.

GOLDEN CACHE MINES, Ltd.

Incorporated 1896. Authorized Capital, $500,000.

Head Office: Reid & McKinnon, Hastings Street, Vancouver.

Mines Office: Cayoose Creek, Lillooet, District, B.C.

Owns and operates the "Golden Eagle," "Golden Stripe," "Ruby," and "Jumbo" mineral claims at Cayoose Creek, Lillooet district, Province of British Columbia. Being opened. Equipped with stamp mill and other plant.

GOLDEN LODE MINING CO., Ltd.

Incorporated by Act of the Legislature of Nova Scotia, 1894. Authorized Capital, $30,000 in 300 shares of $100.00.

Directors:

H. H. Bell, *President.*
A. M. Jack. | J. P. Chipman.
A. A. Hayward, *Man. Dir.* | W. G. Brookfield.

Head Office: A. M. Jack, Sec.-Treas., 175 Hollis Street, Halifax.

Mines Office: A. A. Hayward, Managing Director, South Uniacke, N.S.

Formed to acquire and operate gold properties at Mount Uniacke, County of Halifax, and elsewhere in the Province of Nova Scotia. Property comprises 154 gold areas; average size of vein worked, eight inches; opened by shaft 900 ft.; equipped with one 30 h.p. and one 60 h.p. boilers; Bacon hoisting engine; Cameron and Northey pumps; 10 stamp mill (steam), and other plant. The following is excerpted from the report of the directors for the year 1896:—

"Your directors beg to lay before you the third annual report of the workings of your mine during the year 1896, and also the treasurer's financial statement for the year 1896, together with recommendations made by the manager for the future workings of the mine. This report, though brief, will, we trust, be sufficient to cover all points of interest to the shareholders.

"During the year the mine has been worked continuously and in a most satisfactory manner. Nothing has happened during that time to interfere with the work. The plant has given perfect satisfaction in all particulars. The men have, with a few exceptions, all worked for the best interests of the company, and by consulting the time book it will be found that they have been the most industrious class of workmen. This fact no doubt is due somewhat to the confidence the men have in the company's ability to pay their wages when due.

"During the year there has been added to the plant a new hoisting engine, which cost, set up and ready to run, about $1,200; also a new steam pump and a few other additions in the way of piping, tools, cables cars, ore buckets, etc. During the year there has been mined and milled 376 tons of ore, from which 2,163¼ ounces of gold have been won, an average of about 5⅔ ounces per ton. Roughly speaking the total expenditure for mining, milling, increase of plant and all other charges for the year has been $21,640.81, while the receipts from the sale of gold amounted to $40,290.59, leaving us a profit on the year's operation of $18,649.78, or about 65 per cent. on the entire capital of the company. We are therefore quite confident that this most satisfactory showing will be fully appreciated by the shareholders.

"During the year there have been declared ten monthly dividends of five dollars each per share. In November last the directors decided to cease paying dividends, carrying out the expression of the shareholders at the last annual meeting, which was that when the shareholders had each received in dividends the full par value of their shares, monthly dividends should be suspended. By this procedure much doubt has been created in the minds of some of the shareholders, as well as the public.

"The conditions now found in the mine are entirely changed. Instead of having a small vein of exceeding rich ore, which in the past has only been mined in small quantities, we have a large vein of ore, yielding from one to three ounces per ton. As a comparison, the pay streak formerly being only 45 feet in depth, while the top streak was from 12 to 14 feet; to-day the two streaks have come together and increasing in depth as the work is prosecuted in the easterly direction, we find the ore body to be 125 feet in depth. In order therefore to work the mine in the future under the new conditions found it will be necessary to change the mode of operation if the same degree of success is expected. It will be necessary to drive a drift east from the bottom of the present incline a distance of about 200 feet, and at each 100 feet to drive upraises about 100 to 125 feet; also to carry down the incline 180 feet and drive another level from this point east, and to connect this level with the upper one with another upraise of 100 feet. To do this work it will require from four to five months and an outlay of about $8,000, The value of ore to be won by this undertaking, based upon the present quality of the ore, would be about $100,000. The manager is confident that if this work is continued as outlined, richer and larger ore bodies will be found than have yet been encountered. He therefore strongly recommends the carrying on of this work along the lines laid down."

GEORGIA GOLD MINING CO., Ltd.

Incorporated 1896. Authorized Capital, $1,000,000.

Directors :

H. H. R. Chapman. | J. L. Warner. | Joshua Davis.

Registered Office : Victoria, B.C.

Mines Office : J. L. Warner, Rossland, B.C.

Owns and operates the "Georgia" mineral claims, comprising 50 acres, and located on the east slope of Monte Cristo Mountain, Trail District, Province of British Columbia. On this claim a tunnel was started in under an iron capping, cutting through four or five feet of mixed ore and rock, and run about 100 feet with a cross-cut 40 feet west, and another 16 ft. Several feet below, another tunnel is being driven S.W. with a machine drill operated by steam, and was in 80 feet (June 30) in a very fine grained, light colored rock, the intention being to push forward this work to prospect the claim on the surface, of which in many places is found the rusty iron-cap and sulphides assaying in gold.

GOLDEN RIVER QUESNELLE, Ltd.

Incorporated 1896. Authorized Capital, £350,000, divided into 103,000 10 per cent. Cumulative Preference Shares of £1 each (of which 80,000 are reserved for working capital), and 247,000 ordinary shares of £1 each.

Directors :

Hon. Forbes Geo. Vernon.	Alfred Baldwin, M.P.
Ross Robinson.	Thos. Sopwith.
Major F. I. Richard-Seaver.	T. Eley Sykes.
G. Blake Walker.	Major C. T. Dupont.

Advisory Board in British Columbia :

Sir Henry T. P. Crease. | Hon. C. E. Pooley. | Joseph Hunter, C.E.
F. B. Pemberton, C.E.

CANADIAN OFFICE :

Major C. T. Dupont, Managing Director, Victoria, B. C.

Head Office :

Jasper Foster, *Secretary*, 6 Great St. Helens, London E.C.

Formed to acquire the rights and powers conferred by three Acts of the Legislature of British Columbia, viz. :—

The Quesnelle Lake Dam Company Act, 1881;
An Amendment Act, dated 12th May, 1883;
An Amendment Act, dated 21st February, 1895;

granting the exclusive right to extract the gold and precious metals in the entire length of the South Fork of Quesnelle river and a portion of the main Quesnelle river, about 9½ miles, in the District of Cariboo, British Columbia.

The powers under the Acts of Parliament have been granted for a period up to 1st January, 1913, at an annual rental of $350 (about £70), and in consideration of the outlay to be incurred in the construction, on or before the 31st December, 1897, of a dam to pen back the waters of the Quesnelle Lake, and thereby enable mining for alluvial gold to be carried on in the bed of the river.

The purchase price for the property has been fixed at £270,000, payable as to £23,000 in cash, and the remainder in fully paid ordinary shares, or partly in cash and partly in shares at the option of the directors, leaving £80,000 available for issue as working capital.

GOLD FIELDS OF BRITISH COLUMBIA, Ltd.

Registered 1897. Authorized Capital £600,000 in shares of £1, of which 200,000 shares are set aside for working capital.

Directors:

Right Hon. the Earl of Essex.
Rt. Hon. the Earl of Huntingdon. | Col. Henry Fludyer. | E. Grant Govern.
G. Mure Ritchie. | Col. T. H. Ansley. | Alex. Matheson.

Advisory Board in Canada:

Hon. Chas. E. Pooley. | Hon. David W. Higgins. | David R. Ker.

Head Office: F. C. Hole, Secretary, 18 St. Swithan's Lane, London, E.C.

Formed for the purpose of carrying on the business of a general exploration, prospecting, development, mining, trading and financial corporation, in British Columbia where a large field for profitable working exists. For those purposes a contract has been entered into for the acquisition of the following mining properties and town sites, aggregating about 3,300 acres:—

(1) Ten mineral properties, forming part of the Albert Canyon and Downie Creek Group, containing in all about 450 acres, situate in the West Kootenay Division of British Columbia.

(2.) The mining properties formerly belonging to the Channe Mining Co., Ltd., a corporation established in British Columbia in 1896, with a capital of $1,000,000. These properties consist of sixteen mineral claims, comprising about 800 acres.

(3) Six hundred and forty acres known as the Chrome Valley Claims, situated in the Similkameen District of British Columbia.

(4) One half-interest in the Flossie L. Mine, the property of the Rossland Gold Mining Co. This mine is situated on Spokane Mountain, in the Trail Creek Division of British Columbia, and close to the town of Rossland.

(5) One-half interest in the Little Darling Mine, the property of the Little Darling Gold Mining Co. This mine is situated on Red Mountain, in the Trail Creek Mining Division of British Columbia, and close to the town of Rossland.

(6) One-half interest in the mineral properties known as Little Flo, Victoria, The Handy and Prospector, all situated in the Trail Creek Mining Division of British Columbia, and within four miles of the town of Rossland.

(7) One-half interest in the mineral properties known as Confederation, Oswego, Eureka, New Dominion, Queen of the Hills, Sholto, and Golden Chariot, situated in the northern division of West Kootenay, British Columbia.

(8) Valuable options for the purchase of other mine claims, forming part of the group known as the Albert Canyon and Downie Creek mining properties, in all extending to more than 460 acres.

The above mining properties, which have been most carefully selected out of a very large number which were reported upon, cover an area of nearly 3,000 acres.

(*a*) The town site of Thurlow, situated on Thurlow Island, extending to about 160 acres, including a water frontage of about 2,000 feet, together with the hotel and all other buildings on the property. This town site promises to become most valuable in the early future, owing to the fact that more than 200 mineral claims surrounding it have been taken up within the last few months. In addition to this town site, the company will acquire the whole of the assets and rights possessed by the Shoal Bay Trading Company.

(*b*) The town site of Albert Canyon, situated on the Main Trunk Line of the Canadian Pacific Railroad, extending to about 150 acres, including a good-sized hotel and all other buildings on the property. Owing to the fact that mines of undoubted richness are being developed in the immediate vicinity, this town site will doubtless become of great value in the future.

In addition to the present acquisition of those properties, it is the intention to engage practical and experienced prospectors, who will, on behalf of the company, explore some of the very large areas of the comparatively unexplored territories of the province. By this means the company will be enabled to acquire mining claims, at bedrock prices, which give indication of holding mineral in paying quantities, and which, therefore, justify the expenditure of a reasonable sum for development purposes.

It is not intended that the company shall be, in the ordinary acceptation of the term, a mining company, but it will carry out sufficient mining operations to develop the properties which it acquires, and as soon as their value is proved, subsidiary companies will be formed for the purpose of buying such properties from this company. By those operations it is anticipated that very large profits will be made in the future.

The price to be paid for the whole of the property to be acquired by the Company has been fixed by the vendor's, who are selling at a profit, at the sum of £400,000, payable as to $40,000 in cash, $200,000 in fully-paid shares, and as to the balance of £160,000, in cash or fully-paid shares, at the option of the Directors.

GRANITE CREEK MINING CO., Ltd.

Incorporated 1895. Authorized Capital, $150,000, in shares of $10 each.

Directors:

Robert Stevenson, *President.*

W. Barclay Stephens. | W. L. Hogg. | A. W. Fleck. | J. N. Greenshields. | W. Dale Harris. | C. R. Gillard.

Eastern Office: W. L. Hogg, Secretary, St. Francois-Xavier St., Montreal.

Mines Office: Granite Creek, Yale District, B. C.

Formed to acquire and work an auriferous bench property, containing 640 acres, at Granite Creek, in the Similkameen division, Yale district, Province of British Columbia. The ground has been prospected and is reported to average from 25 to 35 cents to the cubic yard. Being opened up.

The following statement of accounts was submitted at the annual meeting of shareholders, held in Montreal 15th December, 1896:—

Dr.

Leasehold and real estate	$91,800 00
Expense account	6,148 00
Salary account: Secretary's salary since incorporation of The Stevenson Gold and Platinum Hydraulic Mining Co	3,100 00
Recording account	590 60
Improvement account	43,500 00
Rent of office	240 00
Messrs. Wilson & Campbell, deposited *re* fees	500 00
Balance due on stock	5,200 00
Tax account	51 40
Stationary and books	181 80
Engineering fees	200 00
Stamps and telegrams	47 11
Travelling expenses (this includes the travelling expenses for the Stevenson Company as well as this company)	1,058 45
Solicitor's fees (this item includes fees *re* letters patent for the Granite Company and the Stevenson Company	570 00
Exchange and notary fees	9 60
	$153,196 97

Cr.

Capital account	$150,000 00
Bills payable	3,196 97
	$153,196 97

GREAT WESTERN MINING CO., Ltd.

Incorporated 1895. Authorized Capital, $1,000,000.

Directors:

John M. Burke. | C. E. Barr. | D. M. Drumheller. | C. S. Warren.
H. M. Stephens. | Jas. B. Jones. | L. L. Bertonneau.

Head Office: H. M. Stephens, Secretary, Spokane, Wash.

Mines Office: C. E. Barr, Manager, Rossland, B. C.

Formed to carry on mining operations in the Trail mining camp, Province of British Columbia. Being opened.

THE HAMMOND GOLD REEF MINING CO., Ltd.

Capital, $1,000,000. Shares $1.00 each.

Directors:

B. W. Folger. | Jas. Hammond. | Walter Macdonald.
Wm. H. Garvey. | Robt. K. Sproule.

Head Office: Toronto, Ont.

Mines Office: Jas. Hammond, Fort William, Ont.

Formed to carry on mining in the Province of Ontario.

HANSARD GOLD AND COPPER MINING CO.

Incorporated 1896. Authorized Capital, $1,000,000 in shares of $1.00.

Directors:

Martin O'Reilly. | Robert Shiell. | F. W. Swannells.

Head Office: Nelson, B.C.

Mines Office: Robert Shiell, Whitewater Station, K. & S. Ry., B.C.

Owns and operates the "Hansard," "Carberry," and "Tyrone" minerals claims located at Big Sheep Creek, about 13 miles north of the town of Rossland, Trail District, and the "Lone Star," situated about two miles north of Whitewater station on the Kaslo and Slocan Ry., Slocan district, all in the Province of British Columbia. Being opened up.

HAWK BAY GOLD MINING CO., Ltd.

Incorporated 1896. Authorized Capital, $150,000 in shares of $1.00.

Directors:

F. C. Bruce. | John Tilden. | S. C. Mewbury. | H. N. Kitson.
H. C. Beckett. | Hugh C. McLean. | F. S. Wiley. | H. A. Wiley.
G. T. Marks. | S. C. Newburn.

Head Office: H. C. Beckett, Secy.-Treas., Hamilton, Ont.

Mines Office: H. A. Wiley, Managing Director, Hawk Bay, via Bonheur (C.P.Ry.) Ont.

Owns and operates mining location 324X, situate on Hawk Bay, on the Seine River, in the Rainy River District, Province of Ontario, comprising 53 acres. Vein worked averages three feet, yielding about $17.00 in gold per ton. Equipped with 35 h.p. boiler (loco. type), Rand compressor, Bacon hoisting engine, cylinder 7 in. x 10 in., Northey pumps, and other machinery. Being opened up.

W. A. Harvey, *Mine Superintendent.*

HIGH ORE GOLD MINING AND SMELTING CO., Ltd.

Incorporated 14th June, 1895. Authorized Capital, $500,000.

Directors:

Cyrus Happy. | J. H. Griffith. | W. G. Estess. | H. L. Rogers.
D. H. McLeod.

Head Office: D. M. McLeod, 201 Mohawk Block, Spokane, Wash.

Mines Office: Rossland, B.C.

Owns and operates in British Columbia, in the Trail mining district, a mineral claim upon which development work is being carried on with a small force.

HOMESTAKE GOLD MINING CO., Ltd.

Incorporated 1895. Authorized Capital, $500,000.

Directors:

W. G. Johnson, Vancouver, *President.*

E. E. Evans, Vancouver.	C. B. Hopkins, Spokane.
O. Plunkett, "	John M. Burke, Rossland.
J. M. Campion, "	D. M. Simard, Vancouver.

Head Office: Osborne Plunkett, Secretary, Vancouver, B.C.

Mines Office: Trail Creek, B.C.

Owns and operates the " Homestake " claim at Trail Creek, Province of British Columbia. The ore carries gold, silver, lead and copper, and is reported to average $30 per ton. Opened by tunnel and shafts.

HORSEFLY GOLD MINING CO.

Incorporated under the laws of the State of California. Authorized Capital, $1,000,000, in shares of $10, of which at date 800,000 shares have been subscribed.

Directors:

H. N. Morse, *President.*

Fred. H. Beaver | L. P. Drexler. | R. T. Ward. | M. W. Harlow. | Milton Babb.

Registered Office: 16 Chancery Lane, Victoria, B. C.

Head Office: R. T. Ward, Secretary and Manager, 610 Clay St., San Francisco, Cal.

Mines Office: Quesnelle, B. C.

The property contains 360 acres of auriferous mining ground on the Horsefly River, Cariboo district, Province of British Columbia; 140 miles by waggon road, north of Ashcroft, a station on the main line of the Canadian Pacific Railway, together with the right to all the necessary water from an adjacent stream, to hydraulic the same, arriving on the ground under a pressure of over 300 feet. The property was formerly known as the Harper leasehold. The claim is 2,640 x 5,940 feet, with an estimated average depth of over 50 feet, and is located on an ancient channel similar in formation and appearance to the well known blue gravel lead of California. On this lead, within the boundary of this claim, over thirty shafts have been put down to bedrock from thirty to one hundred and fifty feet in depth, and numerous tunnels and cross-cuts run in different directions to prospect the ground, in all of which gold is found in paying quantities. For twenty years placer claims have been worked on the surface of this ground, in a small way with sluice and rockers, with flattering results, one claim alone having taken out in this way over $300,000 — and rockers have been known to pay from bedrock over $200 per day to a single rocker. The following is excerpted from the manager's report to the shareholders, under date of 31st December, 1896:—

Beginning active operations about April 1st, 1896, we excavated a canal along the line of survey located in 1895, five miles in length, about one-half mile of which was principally rock; dimensions thereof: 8 feet top, 4 feet bottom, and 3 feet deep; cost $5,643.35.

Converted about 100,000 feet of fir logs into lumber, requisite for the construction of flumes at depressions on our ditch, and said flumes carried on trestles ranging from 12 to 35 feet high, which were completed at a cost of $3,814.35. Constructed a bridge across the Horsefly River for the purpose of carrying the necessary distributing pipes to various parts of our claim.

Purchased and shipped necessary mining machinery and tools (at a cost of $19,775.45) weighing approximately 460,000 pounds, including four hydraulic elevators, gates, giants, etc., and material for 14,525 feet of hydraulic steel pipe, which had to be hauled from the railroad station at Ashcroft, in waggons, 175 miles to the mine. The duties on material and freight to the mine amounted to $23,495.64. The pipe was manufactured at the mine, costing $5,515 for labor. In order to deliver material for our flumes and pipe line where required, we made ten miles of road; we erected two buildings necessary for our workmen; dammed Mussel Creek, made five waste flumes with gates on ditch line, made two large bulkheads and sand boxes, and all appurtenances necessary to complete a first-class ditch, and 30 inch steel pipe line for hydraulic mining.

The pipe has been placed ready for active mining operations as quickly as climatic conditions will permit--probably by the first of April. Accomplishing the work necessitated the employment in the aggregate of 200 skilled mechanics and laborers, with a total expenditure in connection with the property of $100,985.23, as per following statement:—

Capital Stock		100,000 Shares.
" " issued	90,890	Shares.
" " on hand in Treasury	9,110	"
(9,000 subject to option)		100,000 Shares.

RECEIPTS.

Capital Stock	$90,890 00	
Bills Payable	54,799 19	
Assessment No. 1	20,436 25	
Gold Dust and Individual Contributions	14,859 79	
		$180,985 23

DISBURSEMENTS.

Purchase of Mining Property and Lease.	$80,000 00	
Mining Machinery, Tools and Supplies.	25,063 46	
Freight and Duties	23,495 64	
Labor	22,285 68	
Transportation of Mechanics	904 65	
General and Legal Expenses, Rent, and Interest	25,565 31	
Animal Account	1,597 10	
Sundries	1,120 71	
		$180,032 55
Cash on hand		$952 68

THE HORSEFLY HYDRAULIC MINING CO. Limited.

Incorporated 1893. Authorized Capital, $250,000 in shares of $10. In 1896 it was proposed to issue debentures for a sum not to exceed $150,000, payable in five years and bearing interest at 10 per cent. per annum.

Directors:

J. M. Browning, *President.*
F. C. Innes. | Pierce Lloyd, *Secretary.* | W. F. Salsbury.

Principal Place of Business: Vancouver, B.C.

Location of Works: Horsefly, Cariboo District, B.C.

Manager: J. B. Hobson, M.E., Horsefly, B.C.
Asst. Manager: W. N. Bissett, " "

The company's property is situated on the Horse Fly river, about 150 miles north of Ashcroft on the line of the Canadian Pacific Railway. It is 53 miles north of the 108 Mile House, on the Cariboo wagon road, and about six miles south of the Quesnelle Lake, in Cariboo District, B.C.

It comprises 19 mining leases, aggregating about 2,100 acres of land, covering the auriferous gravel deposits of an ancient river.

The deposits contain a large percentage of rounded, water-worn pebbles, cobbles and boulders of quartz, and are similar in character to the best of the famous deep gravel deposits of the ancient rivers of Central California, known as the Blue Lode.

The bedrock, constituting the floor of the workings, is about 90 feet above high water mark of the Horse Fly river. The water system, as now successfully completed, brings water from Mussel Creek, a southern tributary of the Horse Fly river, by a ditch and pipe line 12½ miles in length, with a capacity for delivering 1,800 miner's inches of water.

The pipe line is of steel, 30 inches in diameter, made in two inverted syphons, aggregating 8,300 feet. There are also three sections of 3 x 5 feet flume, aggregating 600 feet.

Water is delivered from the main ditch under a head 168 feet, and from the Rat Lake pooling reservoir near the mine, under a head of 106 feet, affording ample power for operating the property by hydraulic process where found suitable, or to operate a 100 stamp mill, if required, to crush the high grade cemented gravel encountered in the workings opened in the company's property in the Discovery and Foyle claims.

The mines are equipped with a complete portable hydraulic plant of 18 and 22 inch pipes, and six No. 8 hydraulic Giants.

During the progress of the opening work done during the seasons of 1894, 1895 and 1896, the sum of $92,426.00 gold was recovered from 750,000 cubic yards of gravel and extremely hard cement.

In 1897, equipped with 10 stamp mill to crush cemented gravel, the estimated results for current year being stated as :—

10 stamps will crush 120 tons cemented gravel per day		120 tons.
Estimated value	$	4 85
Estimated daily product		582 00
Possible working days per month		26
Gross monthly product		15,132 00
Deduct cost of mining and milling 3,120 tons cemented gravel at $2 per ton		6,240 00
Monthly net profit		8,882 00
Possible number of working months in 1897 to January 1st, 1898		6
Estimated profit for 1897	$	53,292 00
" " 1898		106,584 00

The following accounts were submitted for the year ended 31st December, 1896, at the annual meeting of shareholders held on 10th March, 1897 :—

CAPITAL ACCOUNT.

RECEIPTS.

Paid-up Capital Stock, 15,000 shares at $10 each	$150,000 00
Balance carried to General Balance Sheet	36,191 40
	$186,191 40

EXPENDITURE.

Mine Accounts :—		
Mine Purchases and Leases	$26,915	00
Prospecting	11,568	50
Ditch and Pipe Line	82,241	44
Dams	3,368	04
Flumes, Sand Boxes, etc	1,079	07
Sluices	8,344	04
Buildings	7,944	01
Carried forward	141,460	10

Brought forward	$141,460 10	
Mine Labor, Explosives, etc	21,453 39	
Mining Plant, Saw Mill, Lighting and Melting Plant.	10,379 59	
Road to 108-Mile House, etc	4,166 64	
Farm	942 56	
Live Stock, Waggons, Harness, etc	581 48	
Management	8,221 09	
Salaries, Stationery and General Expenses	3,284 72	
Travelling Expenses, Transportation of Miners, etc.	1,331 14	
		$191,820 71
Head Office and General Expenses, 1895:—		
Interest Account	$2,731 40	
Legal Expenses	2,825 79	
Stationery and Printing	164 84	
Telegrams and Postage	66 78	
Travelling Expenses	86 75	
General and Incidental Expenses	2,042 31	
		7,917 87
		199,738 58
Deduct :—Gold procured in 1894 during preliminary work in opening Mine		13,547 18
		$186,191 40

Operating Account.

Season 1896.

Gold recovered during season	$31,662 30	
Platinum recovered during season	78 95	
		$31,741 25
Balance carried to General Balance Sheet		15,399 78
		$47,141 03
Management	$3,038 50	
Prospecting	1,123 29	
Mining Expenses, Labor and Explosives	34,751 02	
Lands and Leases	420 00	
Maintenance of Ditch	1,733 27	
" Dams	579 85	
" Pipe	506 10	
" Sluices	254 36	
" Hydraulic Plant	8 00	
" Tools and Implements	337 00	
" Flumes, Sand Boxes, etc.	201 78	
" Melting Plant	386 00	
Buildings	793 33	
Roads and Trails	20 40	
Waggons, Harness, etc., Repairs	13 38	
Wages and General Expenses of Camp	506 75	
Stable Expenses	481 98	
Travelling Expenses	1,197 55	
Insurance	593 12	
Stationary and Printing	69 00	
Telegrams and Postage	126 35	
		47,141 03
		$47,141 03

GENERAL BALANCE SHEET, 31ST DECEMBER, 1896.

Debenture Account, received on account		$52,640 00
Bank of British Columbia, Balance due on loan		17,500 00
Advances by certain Shareholders		17,000 00
Bills Payable		5,000 00
Outstanding drafts from Mine and Personal Accounts		397 88
Profit on Boarding House, 1895	369 15	
" " " 1896	183 43	
		552 58
Profit on Lumber, 1895		305 01
" Stores, 1896		51 12
		$93,446 59
Balance from Capital Account		$36,191 40
" " Operating Account, 1895	$11,795 63	
Head Office and General Expenses, 1896	2,894 81	
		14,690 44
Balance from Operating Account, 1896	15,399 78	
Head Office and General Expenses, 1896	9,135 03	
		24,534 81
Stores on hand		11,214 88
Tools, etc., on hand		3,033 15
Lumber on hand		1,949 47
Live Stock on hand		655 00
Waggons, Harness, etc., on hand		560 00
Gold Dust on hand		100 00
Bank of British Columbia, Cash on hand at Dec. 31, 1896		517 44
		$93,446 59

INVICTA GOLD MINES, Ltd.

Registered 1896. Authorized Capital, £100,000 in shares of £1.

Directors:

Edward Rawlings, *Chairman.*

J. W. Harker. | R. Pearce. | A. E. Walton.

Head Office: F. J. Warner, Secretary, 25 Abchurch Lane, London, E.C.

Mines Office: J. W. R. Young, Manager, Wild Horse Creek, Fort Steele District, B.C.

The company has acquired and commenced working upon the following gold mining claims, viz.: Ah Chow, Jerome Stanley Evans, Schroder, Fun Yei, Ah Yow, Wing Kei, Goo Quong, San Qui, Perseverence and Griffiths, together with extensive water rights situated on the Wild Horse creek, British Columbia, and held direct from the Government of that province.

The following reports and accounts were submitted at the annual meeting of the company on 21st December, 1896 :—

"As early as possible after the incorporation of the company, the directors selected and despatched Mr. James W. R. Young as manager of the property.

"Mr. Young, immediately on his arrival, made an examination of the company's claims, and reported in a very favorable manner in regard both to their extent and value. In his first report Mr. Young wrote : 'The results of my examination of the mine and what tests I have been able to make, are that I am convinced you have a very valuable deposit of gold bearing gravel of great extent, and the average values hitherto placed upon it appear to have been moderately stated.'

"The greater portion of the present season has necessarily been occupied in development work, in purchasing and fixing the requisite plant, and generally in preparation for washing on an extensive scale during the following year.

"However by pushing everything forward with energy it was found possible to start washing in the early part of August, but this washing was only carried on as subsidiary to the development and installation work going on at the same time. Under these circumstances the directors are quite satisfied with the results obtained."

The Manager, in concluding his report reviewing the past operations, states : "From the experience and knowledge gained of the different portions of your property, the rich ground of the north, and with improving ground on the south, I am fully justified in assuring the directors of my belief that next year will place the company on a profit-earning basis.

"It is already known to the shareholders that, in addition to its deposit of gold-bearing gravel on the surface, the company possess a deep lead or lower channe l of gravel, which is believed to carry large quantities of gold. During the present winter a shaft will be sunk with a view of testing this lower deposit."

Balance Sheet to 31st October, 1896.

Dr.

	£ s. d.	£ s. d.
To Share Capital authorized £100,000		
Issued—		
" 8,500 fully paid Shares, issued to Vendors in payment for property, as per *contra*.....	85,000 0 0	
" 10,607 shares, 15s. per share called up.....	7,955 5 0	
	92,955 5 0	
Less Calls in arrear.....	1,212 10 0	
	91,742 15 0	
Add Calls paid in advance	1 15 0	
		91,744 10 0
" Sundry Creditors		479 6 7
		£92,223 16 7

Cr.

	£ s. d.	£ s. d.
By Purchase of Property.....		85,000 0 0
" Construction Account—		
New Dams, Ditches, Flumes, Ground Sluices, etc.....		1,985 11 9
" Electric Light Installation		20 9 9
" New Buildings..... ...		162 2 5
" Stores in Hand		231 15 10

				£	s.	d.	£	s.	d.
By Expenditure Account—									
British Columbia—From the date of the Incorporation of the Company (August 19, 1895), to September 30, 1896.									
Manager's and Accountant's salaries			500	0	0				
General Expenses			656	18	4				
Working Expenses—									
Repairs to Buildings and Works.	225	0	6						
Ground Sluicing..	735	16	9						
Piping	227	3	10						
Electric Light Maintenance...	62	18	7						
				1,250	19	8			
				2,407	18	0			
Less—									
Sales of Gold, including gold in transit	1,189	1	8						
Transfer Fees....	10	17	6						
Exchange Acct ..	4	14	10						
				1,204	14	0			
							1,203	4	0
London—From the date of the Incorporation of the Company (Aug. 19, 1895) to Oct. 31, 1896.									
Preliminary Expenses				310	0	0			
Directors' Fees, Law Charges, Office Rent, Salaries and General Expenses (including Stationery, Printing, Postages, Cablegrams, etc				1,296	12	10			
							1,606	12	10
									2,809 16 10
" Gold in Transit									905 12 4
" Cash at Bankers and in hand—									
London							129	17	2
British Columbia							378	10	6
In Transit							600	0	0
									1,108 7 8
									£92,223 16 7

IRON COLT GOLD MINING CO., Ltd.

Incorporated 1896. Authorized Capital, $1,000,000, in shares of a value of $1.00.

Directors:

W. A. Campbell. | J. F. McCrae. | John J. Moynahan.

Head Office: W. A. Campbell, Rossland, B.C.

Owns and operates the Iron Colt mineral claim, Trail Creek District, Province of British Columbia. Being opened.

IRON HORSE MINING AND MILLING CO.

Registered 10th August, 1895. Authorized Capital, $1,000,000.

Head Office: Spokane.

Mines Office: J. D. Farrell, Rossland, B.C.

Formed to carry on mining in British Columbia. Owns and operates the "Iron Horse" claim, located on the south slope of Monte Cristo Mountain, Trail District. Province of British Columbia. Being opened up.

IRON MASK GOLD MINING CO.

Incorporated August, 1895. Authorized Capital $500,000, in shares of $1.00.

Directors:

Pairick Clark. | Austin Corbin. | John A. Finch. | W. J. C. Wakefield.
A. M. Holter. | Peter Larson. | A. B. Campbell.

Head Office: F. E. Lucas, Secretary, Spokane Wash.

Mines Office: Patrick Clark, Managing Director, Rossland, Wash.

Owns and operates the "Iron Mask" mineral claim, comprising 11 accres in the Trail District, Province of British Columbia. Average size of vein worked 4 ft.; opened by shafts, 125 ft. and 90 ft. respectively, and one tunnel in at date 850 ft. Equipped with Ingersoll-Sergeant drills; hoisting engine having double cyl, 9 x 12 in.; drum 42 in; Knowles pump and other plant, the power for which is supplied from the War Eagle mine, which it adjoins.

JOSIE GOLD MINING CO.

Incorporated 26th October, 1895. Authorized Capital, $700,000, in shares of $1.00.

Directors:

George T. Crane, *President.*
F. C. Loring. | F. E. Snodgrass. | O. G. Labaree. | A. G. Avery.

Head Office: Rookery Building, Spokane, Wash.

Mines Office: George T. Crane, President, Rossland.

Owns and operates the "Josie" mineral claim, Trail Creek district, Province of British Columbia. Vein worked averages 5 ft.; opened by shaft 100 ft., and tunnels in at date of report 700 ft., 200 ft., and 125 ft. respectively. Forty persons employed in 1896. The equipment comprises: One 60 h.p. tubular boiler; one Ingersoll-Sergeant 5-drill compressor; Ingersoll hoisting engine, cylinder 8 x 12 in., diameter of drum 36 x 36 in.; one Cameron pump; American diamond prospecting drill, etc.

JUMBO GOLD MINING CO., Ltd.

Incorporated 7th May, 1896. Authorized Capital, $500,000.

Head Office: Spokane, Wash.

Mines Office: M. R. Galusha, Rossland, B. C.

Owns and operates the "Jumbo" claim, comprising 21 acres, 2½ miles west of the town of Rossland, Province of British Columbia. On this claim is a very prominent exposure of iron-stained, fine grained eruptive rock, with more or less decomposed sulphides, in which a shaft was sunk, showing some low grade ore, and afterwards a tunnel was run in about 260 ft. with about 125 ft. of cross-cuts. For 150 ft. there was no ore; then the tunnel entered and continued for nearly 90 ft. in a body of very low grade, coarse-grained pyrrhotite, in which, however, there is ore containing some copper pyrites, mispickel and calcite, that carries enough value in gold to make it shipping ore. Being opened up.

LAKE LODE GOLD MINE.

Owner:
W. A. Sanders, Caribou, N. S.

Mines Office: Caribou, Halifax County, N. S.

This property, formerly owned and operated by the Lake Lode Gold Mining Co., was acquired by the present owner in June, 1893, who, in 1895, equipped it with a modern mill and complete mining plant at a cost of $21,000. Equipment comprises:

Boilers—One 80 h.p., "Monarch" type.

Hoisting—One Bacon double drum, link motion winding engine, 10 x 15 in. cylinder, drums 4 ft. in diameter.

Pumps—One 40 h.p., and one Eclipse pump for fire purposes.

Rock breakers—One 7 x 10 in. Blake crusher.

Lighting—One 30-light dynamo.

Engine—One Robb-Armstrong automatic engine.

Mill—10 stamps, 875 lbs., drop 100 per min.; weight of mortars, 6,200 lbs. each, with steel linings and cast iron aprons. Cast iron silver traps at end of electro plates. Tappets, cams, shoes and dies are of the best chrome steel. One amalgamating barrel and two Hendy "Challenge" ore feeders. Mortars, mercury traps, amalgamating barrels, are of the owner's latest design.

LAKE SUPERIOR MINES DEVELOPMENT CO., Ltd.

Incorporated January, 1896. Re-organized December, 1896. Authorized Capital, $1,000,000, in shares of $1.00 each.

Directors :

John McKellar. | Walter Ross. | Peter McKellar. | Geo. Clovet.
George A. Graham. | John T. Horne.

Head Office : Geo. A. Graham, Treasurer, Fort William, Ont.

Mines Office : Wm. Peters, Superintendent, Jackfish, Ont.

Owns and operates mining location R. 569, comprising 160 acres, at Jackfish, Algoma District, Province of Ontario. Opened by tunnels. Equipped with 60 h.p. boiler, 7-drill Rand compressor, Rand and Ingersoll drills, Northey pump, Blake rocker breaker, and 10-stamp mill (steam).

LE ROI MINING AND SMELTING CO.

Incorporated 20th May, 1891. Authorized Capital, $2,500,000, in shares of $5.00.

Directors :

W. W. D. Turner.
George Turner. | L. F. Williams. | J. M. Armstrong.
W. M. Ridpath. | W. J. Harris. | D. W. Henley.
F. H. Graves. | J. N. Peyton. | E. D. Sanders.

Head Office : L. F. Williams, Secretary, Spokane, Wash.

Mines Office : Rossland, B. C.

George Turner, *Managing Director.*
W. M. Ridpath and W. J. Harris, *Managing Committee.*
Wm. C. Hall, *Mine Superintendent.*

Owns and operates at Trail, British Columbia, the "Le Roi," "Black Bear" and "Ivanhoe" claims, employing in 1896 125 persons. Vein worked averages 25 ft. and yields $35.00 to $40.00 per ton. The mine is opened by three shafts down 500 ft., 450 ft., 75 ft., at date of report. Black Bear tunnel driven in 350 ft.; the other tunnels and drifts aggregate 2,800 ft. The equipment comprises :—

Boilers—Two 80 h.p. tubular; three 100 h.p.
Air Compressors—One Rand 40-drill; one Rand 4-drill, and one Rand 10-drill.
Rock Drills—Fifteen (Rand and Ingersoll-Sergeant).

Pumps—Three Cameron and one Blake.

Hoisting Engines—One Lidgerwood, friction geared, 12 x 14 in.; one 20 x 42 in. direct-acting Ingersoll; one small American make.

Lighting—By Edison electric plant, having a capacity of 200 lamps and 3 arc lights.

Diamond Drills—One Sullivan.

OUTPUT.

1894	6,000	tons of value of	$250,000
1895	11,000	" "	450,000
1896	20,000	" "	800,000

During 1895 and 1896 dividends aggregating $250,000 were paid to the shareholders.

LIGHTNING CREEK GOLD GRAVELS AND DRAINAGE CO., Ltd.

Incorporated 1896. Authorized Capital, $1,000,000.

Directors:

Dr. Reynolds. | Oliver Harvey. | R. G. Tatlow.

Head Office: Oliver Harvey, Secretary, Ashcroft, B. C.

Formed to carry on mining in British Columbia, and in particular to work the deep channel of Lightning Creek by a bed-rock tunnel, paying therefor to the Government of British Columbia an annual rental of $1,000. The company's lease is defined "from above the lower line of the Big Bonanza placer dam, on Lightning Creek, Cariboo, to the upper end of the Van Winkle placer dam," and is held for twenty years, with the privilege of renewal for a like period thereafter.

LILLOOET FRASER RIVER AND CARIBOO GOLD FIELDS CO., Ltd.

Registered 24th January, 1895. Authorized Capital £300,000 in shares of £1, of which there has been subscribed and fully paid £250,000.

Directors:

R. M. Horne-Payne, *Chairman.*
F. S. Barnard. | W. Farrell. | J. Goldschmidt. | J. Horne-Payne, Q.C.
J. A. Mara. | R. Northall-Laurie. | Henri Rosenheim.
Hon. Forbes G. Vernon.

CANADIAN OFFICE:

F. S. Barnard, Victoria, B. C.

Head Office:

Edgar A. Bennett, *Secretary*, 1 and 2 Great Winchester St., London, E.C.

Robt. Jamieson, *Chief Engineer and General Superintendent.*

———

At date of report the company is interested in 81 claims in the Province of British Columbia, and of these owns 45, has a 75 per cent. interest in 9, and has 27 under bond. These embrace the Alpha Group in the Lardeau District ; the City of Spokane mine, Trail District ; Lanark Group, Illecillewaet District ; the Sunshine Group, Lardeau District ; the Isabella Group, Illecillewaet District, and the Aaron Group, Montgomery District. The following is excerpted from the report submitted to the shareholders, 15th December, 1896 :—

ILLECILLEWAET DISTRICT.

Lanark Mine.—This mine has been opened by a series of workings, consisting as follows :—

1. Surface excavations to a probable average depth of 15 feet or so, along the outcropping of vein. All along this surface exposé the galena, which is of a very good quality, shows up in fair proportion to the gangue, or vein matter generally, which is a true concentrating ore.

2. Below these surface excavations and workings, what is known as the 100 foot level has been run in, opening on the hillside. The level is connected with the surface workings by an inclined shaft or winze at a distance of 125 feet from its opening.

At about 150 feet in from the mouth of the tunnel, occurs a a slip or open break, at almost right angles across the measures from course of vein, and just inside this slip or break the ore body is encountered, showing an average width of 26 feet and exposing immense bodies of solid galena with rich-looking masses of concentrating carbonates. At a point a little over 200 feet from opening, an inclined shaft or winze had been sunk, along foot wall of vein connecting with the 200 foot level. This winze shows the angle of dip to be about 62 degrees. Along the 100 foot, on the ore chute opened between the slips referred to, stopes have been formed or opened, all showing up an extensive ore body.

3. On the 200 foot level, westward from shaft, a level has been run, following foot wall of vein for a short distance, when it is turned diagonally across an ore body and driven in ore for a distance of 70 feet.

4. At a point 75 feet below 200 foot level, a third level has been driven into the westward, opening up the ore body on the same chute as occurs in the upper levels. This level is in a distance of from 45 to 50 feet with a massive-looking body of galena intermixed with carbonates exposed all along its course and face.

At 400 feet a tunnel has been driven, opening from the surface for a distance of 550 feet or so.

At the present moment of writing, this drift has just cut into the ore body which shows on the face a mass of gangue, well intermixed with slight stringers of galena.

The works already developed in the several tunnels to the 270 foot level exposes a body of ore which is immediately available, and which I estimate to contain not less than 38,000 tons, and with the present strike at the 400 ft. level it would be perfectly safe even at this stage to add at least one-half to the foregoing estimate.

On the Maple Leaf claim the Lanark vein has been opened up by a prospect tunnel, in which is exposed a very promising body of ore.

On the 27th August a contract was entered into with Messrs. Fraser and Chalmers, Chicago, for the construction of an Otto aerial tramway, 6,550 feet in length, the fall in this distance from the loading terminal at mine to the unloading station at concentrator being 2,640 feet. This tramway has a delivering capacity of 150 tons in a working day of ten hours, but at present only sufficient buckets and carriers are being provided to deliver at concentrator 100 tons in 100 hours. Should it be found advisable to increase the mine output, this can be done to the extent of an additional 50 tons every ten hours by simply adding the requisite number of extra buckets, etc. If a further increase in output be desired, the tramway could be run the 24 hours successfully, and the maximum capacity of one such tramway under these conditions would be reached at 360 tons. The above tramway was contracted to be delivered, constructed and ready for operation within 90 days.

Concentrator—On September 30th a contract was awarded (to the same firm) for the delivery of a concentrating plant to our plans, with a capacity of concentrating 100 tons every ten hours, to be delivered in 50 days. The exact nature of the various appliances necessary in connection with this plant for the most profitable treatment of this particular ore were determined by a series of practical tests, made on the works by ourselves, and the plant was selected in accordance with them. I herewith append a detailed statement of the results of these tests, together with the assay values of the various grades of concentrates :—

Mark or Number.	Silver.			Lead.	Value per ton. (2,000 lbs.)
	Oz.	Dwt.	Gr.	Per cent.	
Concentrates, No. 1	82	15	0	82·0	$105·48
" " 2	77	15	0	81·25	101·62
" " 3	72	10	0	79·75	97·15
" " 4	67	10	0	79·00	93·30
" " 5	58	10	0	77·50	86.28

Silver calculated at ·63 cts. per oz.
Lead calculated at ·03 cts. per lb.

The results arrived at from the hand concentrating tests would indicate that the product will be a high grade concentrate, but in working on a large scale with our mill, the above proportions will naturally be better probably to an extent of not less than 15 per cent.

A saw mill, with a cutting capacity of ten to twelve thousand feet per day is being put in in a permanent fashion for the supply of timber to the mine. On the surrounding properties owned by the company there is a sufficiently abundant supply of timber growing to meet all demands for a long time to come.

Active operations of a preparatory and permanent nature were entered upon early in July of the current year, and the following is a short summary of the work accomplished since.

Surveys—A re-survey of all mineral claims, together with several preliminary locating surveys for permanent location of aerial tramway.

Electric Plant—It is intended to instal an electric plant here, the initial or generating power being derived from water turbines, with the double purpose of supplying the necessary light and giving a 50 h.p. current at the mine, to be used in mine haulage, ventilating, pumping, sinking prospect shafts, following the ore bodies to deeper levels, and possibly for drilling purposes, should we later on be satisfied with the practicability of operating a percussion electric drill to advantage.

Concentrator—The whole of the working plant for concentrating mill, constructing ore bins, concentrating bins, together with the bills of lumber for the buildings have been got out, and in every possible direction the work has been rushed, with a view to enable us to begin ore shipments before being overtaken by the heavy snows. If we are not delayed by any unforeseen circumstances, we ought to have everything completed about the latter end of November.

Isabella Mine—This mine is situated about one-half mile or so from the company's townsite of Laurie.

The several surface cuts or drifts along the out-cropping indicate the presence of an ore body of very considerable dimensions, which had it been followed on the dip, might have been opened out on an extensive and highly profitable scale.

Trail Creek District

City of Spokane Mine, Rossland Division.—Tnis property is practically a full sized mineral claim (under the old Act), the dimensions being 1,500 by 600 feet. It is situated in the very centre of what is known as the main or North Mineral Belt of the Rossland Mining Division.

Ore Cropping—On the centre line of claim, on the east half, and 50 feet or so above the flat, occurs a heavy surface cropping with all the usual characteristics of the Rossland ores. Surface assays gave sufficient indications of gold being present, together with 4 or 5 per cent. of copper in association with the iron sulphides to warrant the same conclusions before formed with reference to this property as had been arrived at with all other mines developed in this immediate district, namely that with even very low surface values in gold, if there was sufficient evidence of an ore body existing to warrant the acquiring of the property, it was safe to assume that, as depth in mining operations was reached, it would be found that there would be an equivalent or proportionate increase of gold values.

On 19th May a tunnel was started to run in on the strike or course of the vein. A few feet inside the point where the ore body was first encountered in the tunnel, a winze or slope shaft is being sunk, following the hanging wall of vein. It is the intention to sink this winze to a depth of at least 100 feet, and long before this point is reached I expect to have such increased values to report as will warrant me in proceeding with the sinking of the main shaft outside, to tap the vein in three successive levels, the first level at 125 feet from surface, the second level at 250 feet, and the third level at 375 feet below surface.

The improvements on this property up to date are, shortly, as follows —

Mining—258 feet of tunnelling, 15 feet of winze sinking, several surface prospect drifts, proving the existence of other veins than that being drifted upon.

Machinery—A Rand air compressor, 40 h.p. boiler, 4 double rock drills, water pump.

Buildings—Manager's house partially constructed, assay house, cook house, two bunk houses for workmen, cabin for foreman, boiler and compressor house, and stable.

North Star Mine.

North Star Mine.—This property is situated in what is known as the Kootenay and Columbia Mountain, near the north-east extremity of the Rossland Main or North Mineral Belt.

The development here, and also in the adjoining claim, the Georgia, will go to prove to a very great extent and enhance the value of our North Star claim.

Beaver Mountain Division of Trail Creek.

Montgomery District.—About 16 miles north of Trail Landing on Columbia river, is situated Camp Montgomery.

Aaron's Isle.—On the Aaron's Isle group exists a magnificent showing of iron sulphide ore, giving encouraging surface assays. The exposé of ore here is probably one of the most extensive showings in the country, and can be traced in one continuous line without a break clear across the full extent of three claims. At a point where the ore exposé is strongest a prospect shaft has been begun, which is being sunk on the ore body and following same on the natural angle of dip. It has now reached a depth of 38 feet and shows highly encouraging results. The shaft is following the hanging wall of vein, and from the surface of its present depth has a solid bed of iron sulphide ore, fully four feet wide, backed in by a strong mineralized quartz, the width of which has not been determined. On the surface the vein mass gives a total of 38 feet wide.

Lardeau District.

Alpha Group.—Broadview Claim.—Near the north end line of claim there is exposed an immense vein or ledge of quartz, averaging in width from 45 to 50 feet. On the end exposure the thing looked so immense as to be at first glance suspicious, looking like a "spill" of quartz on the hillside. On tracing it up, however—in which task there was no difficulty, as all along the whole line of exposé no surface soil may be said to exist—I found that the exposure, although so immense, consisted of a true vein, well in place, resting on a slate foot wall, the hanging wall being serpentine. From the point of exposure at northern extremity of Broadview, the surface rises abruptly to an altitude of between three and four hundred feet, thus affording a splendid opportunity of tunnelling in, in a succession of three separate lifts on the vein. The

exposure along the whole course traced, wherever I broke into it from 20 to 25 feet back from hanging wall, showed heavy impregnations of galena, with considerable carbonates and grey copper. At several points in the exposure the mineral showed in solid body, varying from three to five feet in width, while below the 25 foot limit, measuring from the hanging wall, the balance of 20-25 ft. of quartz gangue showed a very heavy impregnation of grey copper, which is always a sure indication of high silver values, and generally speaking fair gold values. Below this quartz gangue, and resting immediately on the foot wall and in contact with the slate formation, occurs the most valuable part of this whole ridge. This consists of high grade ore of grey copper, averaging, where well opened up on the adjoining claim of the Great Northern property to the north, from one to two and a-half feet in thickness.

In view of the exceedingly promising outlook afforded by this property, which I have no hesitation in pronouncing one of the greatest among the many recent big finds in different parts of British Columbia, immediate arrangements were made for the construction of a winter camp, to accommodate 20 men. A force was put on the reconstruction of a temporary trail running into this district from the main waggon road from deep water, at Thompson's Landing, at East Arrow Lake.

In stripping surface of vein body for commencement of the shaft, a very large body of ore in place was encountered. The shaft is now well underway, and will be pushed to a depth of 100 feet with all possible speed.

Recently a section of land, comprising 640 acres, was taken up on behalf of the Company, at a point on Arrow Lake, known as Galena Bay, as being the most suitable situation for shipment from the whole of the Lardeau country, or at least all of it from a line four miles east of Thompson's landing, which is situated at the head of the east arm of Arrow Lake. The situation here forms a typical smelter site, with many natural advantages in its favor. It is intended during the coming season to ship all our ore to this point, from which a sleigh road is at present being constructed to intersect and connect with road running from Thompson's Landing to Trout Lake City, which is located 14 miles east of Thompson's Landing.

It is the intention as early as next year's season will permit, and the Alpha development warrant it (and of this there is little doubt), to construct from the Alpha to the Forks terminus an aerial tramway capable of delivering a probable output of 400 tons per day. Even should the solid ore body now being opened not maintain its width on the lateral development, provision will have to be made for bringing from this one mine alone at least 250 to 300 tons of concentrates per day.

Sunshine Group—Abutting the Sunshine mineral claim on the south is a full-sized mineral claim known as the Towser. To the north of the Sunshine, and immediately abutting it, is the partially developed claim Silver Cup, and further north the claim Free Coinage. All four constitute a compact group, through which runs a large vein of quartz on the strike or course, 45° North-West. The exposure much resembles in character that of the Alpha Group.

Upon the Sunshine claim the vein is opened by a prospect tunnel about 25 feet in extent, started upon a very fine exposure in the vein gangue and lying in close touch with the hanging wall, of solid Galena ore 10 to 18 inches thick, with strong masses of grey copper present.

A tunnel is being driven in on the end exposure of vein, and at same time a shaft is being sunk to prove the ore on the continuity of dip. Already 20 to 30 tons of shipping ore have been got out, which will give a net return of $60 to $80 per ton, after paying shipping and other charges.

BALANCE SHEET, SEPTEMBER 30TH, 1896,

DR.

		£	s.	d.
To Capital Authorized—				
300,000 shares of £1 each		300,000	0	0
" Capital Subscribed—				
250,000 shares of £1 each		250,000	0	0
" Sundry Creditors		1,710	4	0
Contingent Liabilities—				
Wire Ropeway at Lanark Property	$14,000			
Shares, partly paid	27,000			
		£251,710	4	0

Cr.

	£ s. d.	£ s. d.
By Cost of Acquisition of Mining Properties, Deposits on account of Options (including £4,217 4s. 4d. on account of options expired) and Purchase of Properties and Shares, together with amount expended on Mining Developments		86,021 19 4
" Sundry Debtors		2,407 6 6
" Office Furniture—less Depreciation written out		329 11 0
" Investments at Cost		55,844 7 9
" Loans		49,562 7 9
" Cash Balances—		
London Bankers— £ s. d.		
On Deposit 3,000 0 0		
" Current Acct 616 4 5		
3,616 4 5		
Less Petty Cash 8 18 9		
	3,607 5 8	
Paris Bankers—		
On Deposit 25,224 2 5		
Petty Cash at Paris Office 9 7 3		
	25,233 9 8	
At Vancouver—		
At Bank of Montreal—		
On Current and Deposit Acct. (and in Agents' hands)	22,247 0 10	
		51,087 16 1
" Income and Expenditure Acct—		
Balance at Debit		6,456 15 6
		£251,710 4 0

Income and Expenditure Account for the Period from January, 24th, 1895, to September 30th, 1896.

Dr.

	£ s. d.	£ s. d.
To Expenditure at London, Vancouver and Paris Offices—		
Legal and Preliminary	2,623 4 3	
General Expenses (including rents, salaries, etc.)	3,100 16 2	
Expenses incidental to organizing in British Columbia (including cost of visit of Chairman, Solicitor and Secretary to British Columbia)	4,172 1 11	
Cables and Telegrams	541 8 2	
Printing and Stationery	216 13 1	
Office Furniture—Depreciation written off	36 12 1	
		10,690 15 8
" Directors' Fees		1,710 7 11
		£12,401 3 7

Cr.

By Dividends and Interest on Investments and Loans, and Profits on Realization of Investments, etc	5,929 0 4
" Transfer and other Fees	15 7 9
" Balance to Balance Sheet	6,456 15 6
	£12,401 3 7

LILY MAY GOLD MINING CO., Ltd.

Incorporated 1896. Authorized Capital, $1,000,000, in shares of $1.00 each.

Directors :

George Turner. | Frank Kizer. | J. C. Williams. | W. J. Harris.
A. K. Roy.

Head Office : Frank Kizer, Secretary and Treasurer, 215 Hyde Block, Spokane, Wash.

Mines Office : W. J. Harris, Managing Director, Rossland, B. C.

Owns and operates the "Lily May" gold claim, comprising 13 acres, 1½ miles south of the town of Rossland, Trail District, Province of British Columbia. Opened by three shafts, at date, down 108 ft., 50 ft. and 90 ft., and by a tunnel in 85 ft., connecting with No. 1 shaft at a depth of 68 ft. Equipped with one 50 h.p. upright boiler, Ingersoll-Sergeant 5-drill compressor, steam pump and other plant.

MAYFLOWER GOLD MINING CO.

Incorporated 16th April, 1896. Authorized Capital, $1,000,000, in $1.00 shares.

Directors :

W. R. Rust.
A. G. Avery. | A. G. Hiscock. | George T. Crane. | F. E. Snodgrass.

Head Office : F. E. Snodgrass, Sec.-Treas., Spokane, Wash.

Mines Office : F. C. Loring, M. E., Rossland, B. C.

Owns and operates the "Olla Podrida" mineral claim, located about one mile south of the town of Rossland, in the Trail District, Province of British Columbia. The vein averages about 3 ft.; opened by shafts, each down at date of report 80 ft. and 50 ft. respectively, and two tunnels in 200 ft. and 45 ft. Being opened up.

MIKADO GOLD MINING CO., Ltd.

Registered 15th July, 1896.

Col. W. T. Engledue, *Chairman.*

CANADIAN OFFICE :

Theodore Breidenbach, Manager, Mikado Mine, via Rat Rortage, Ont.

Head Office:

79 Gracechurch St., London E. C.

Formed to adopt and carry into effect an agreement made between the South African General Development Syndicate (Ltd.) of the one part, and the Mikado Gold Mining Co., and to carry on mining in the districts of Rainy River, Thunder Bay, and Algoma, Province of Ontario. At date owns and operates mining locations D147, 148 and 149, comprising respectively 40, 46, and 15 acres at Shoal Lake, Lake of the Woods, Ontario, on which is situated the Mikado gold mine worked by the company. Vein worked averages 8 ft.; opened by shaft down at date of report 70 ft. To be equipped with mining plant in 1897.

MODSTOCK MINING CO., Ltd.

Incorporated October 9th, 1896. Authorized Capital $300,000, in shares of $100.

Directors:

J. D. Copeland, *President.*
R. D. Kirk. | Robert Dickson. | C. N. Wilkie.

Head Office: C. E. Harris, Sec.-Treas., Antigonish, N.S.

Mines Office: W. J. McIntosh, Manager, Forest Hill, Guysboro Co., N.S.

Owns and operates 57 gold areas at Forest Hill, Stormont District, Province of Nova Scotia. Equipped with 10-stamp mill (steam) and other, plant. The output of the mine during the past two years has been: 1895, 1676 tons rock crushed (6 month's working), yielding 998 ozs. 4 dwt.; 1896, 3580 tons of rock crushed, yielding 1,854 ozs.

MONARCH GOLD MINING CO.

Incorporated 1896. Authorized Capital $750,000 in shares of $1.00.

Officers:

A. K. Ogilvie, *President.*
Frank M. Turner, *Vice-President.* | A. T. Kendrick, *Secretary-Treasurer.*

Head Office: A. K. Ogilvie, North Port, Stevens County, Washington.

Mines Office: Rossland B.C.

Owns and operates the Cariboo mineral claim, Trail Creek District, Province of British Colnmbia. Being developed.

MONTE CRISTO GOLD MINING CO.

Incorporated 1st May, 1896. Authorized Capital, $1,000,000, in shares of $1.00.

Directors:

W. D. Currier. | J. P. Graves. | F. E. Snodgrass. | F. C. Loring. | F. F. West.

Head Office: F. E. Snodgrass, Sec.-Treas., Spokane, Wash.

Mines Office: F. C. Loring, M. E., Manager, Rossland, B. C.

Owns and operates the "Monte Cristo" mineral claim, located on the west slope of Monte Cristo Mountain, one mile west of the town of Rossland, Trail District, Province of British Columbia. Opened by one shaft 50 ft. and three tunnels, each 235 feet, 257 ft. and 30 ft.; 20 persons employed in 1896. Equipped with one tubular, 80 h.p. boiler, one Ingersoll-Sergeant 7-drill compressor, Cameron steam pump, etc.

MONTREAL HYDRAULIC MINING CO. OF CARIBOO, Ltd.

Incorporated 27th March, 1895. Authorized Capital, $250,000.

Directors:

F. C. Innes, *President.*
S. O. Richards. | J. M. Browning. | John Kennedy. | E. B. Greenshields.

Head Office: C. C. Bennett, Secretary, Vancouver, B. C.

Mines Office: Thos. Drummond, M. E., Quesnelle, Cariboo, B. C.

The company's property consists of sixteen claims, covering about two thousand acres, on the Quesnelle River, about 25 miles below the Forks of Quesnelle, in the Cariboo District, British Columbia, upon which a certain amount of development has been done and is proceeding.

NEW EGERTON MINING CO.

Incorporated 1896. Authorized Capital, $200,000.

Directors:

Peter A. McGregor. | J. D. McGregor. | John Yorston.

Head Office: J. D. McGregor, New Glasgow, N.S.

Owns about two hundred gold areas in the 15-Mile Stream District, Province of Nova Scotia. The official returns of the gold won by the former and present operators are as follows:—

1887.....	299	ounces,	15	dwts.	from	569	tons rock crushed.
1888.....	946	"	8	"	"	2,151	"
1889.....	786	"	9	"	"	1,417	"
1890.....	2,184	"	9	"	"	2,476	"
1891.....	2,446	"	5	"	"	4,263	"
1892.....	1,285	"	..	"	"	2,460	"
1893.....	497	"	17	"	"	1,401	"
1894.....	552	"	..	"	"	1,173	"
1895.....	2,956	"	2	"	"	5,239	"
1896	2,624	"	..	"	"	5,200	"

Equipped with an excellent working plant which includes two mills (of 15 and 10 stamps respectively), Rand air compressor, hoisting and pumping gear.

NEW GLASGOW GOLD MINING CO., Ltd

Incorporated by an Act of the Legislature of Nova Scotia, 1895.
Authorized Capital, $20,000.

Directors:

John McIntosh, Stellarton. | Angus Chisholm, New Glasgow.
J. A. Fraser, New Glasgow.

Head Office: J. A. Fraser, New Glasgow, N.S.

Property at Goldenville, Guysborough County. Nova Scotia. Equipped with 10-stamp mill and other plant. 45 persons employed in 1896. The gold yield since 1895, officially reported, has been :—

1895 (4 months only).....	1,073	tons milled gave	432	oz. 8 dwt.
1896.....	3,791	" "	1,734	" 5 "

NORTHERN LIGHT GOLD MINING CO., Ltd.,

Incorporated 1896. Authorized Capital $250,000, in shares of $1.00.

Directors:

Jas. Freel. | Dr. E. A. Hall. | John Jardine. | J. L. Forrester.
John McRobbie. | Jas. Maynard. | A. F. McCrimmon.

Head Office: B. F. Atherton, Secretary, 86½ Government St., Victoria, B.C.

Formed to acquire and work the "Northern Light" mineral claim, situated on Goat Mountain, in the Goat River mining division of West Kootenay, British Columbia. The purchase consideration was $245,000 fully paid up shares in the company.

NOVA SCOTIA MINING AND PROSPECTING CO., Ltd.

Being incorporated at date of report.

Principals :

Hon. David McKeen.	John F. Stairs.	Wiley Smith.
Hon. Wm. Stairs.	M. Dwyer.	Graham Fraser.
	R. G. Leckie.	

Head Office : R. G. Leckie, M.E., Torbrook, N. S.

Mines Office : Goldenville, N.S.

Formed to work the Consolidated Gold Mines of Goldenville, Nova Scotia. Work proceeding at date of report.

NORTH STAR GOLD MINING CO.

A private organization.

Owners :

C. De W. Smith.	John Smith.	George Churchill.
John Churchill.	Dr. Cameron.	Walter Brookfield.
W. H. Johnson.	Alex. McDonald.	Rod'k Macdonald.
J. A. Macdonald.	Rufus O. Bayer.	

Head Office : J. A. Macdonald, Halifax, N.S.

Mines Office : Roderick McLeod, Isaac's Harbor, N.S.

This company's property at date comprises about 30 gold areas held under Crown lease, and 90 areas operated under prospecting license, and situate on the west side of Isaac's Harbour, Guysboro County, Province of Nova Scotia. Equipped with 10-stamp mill and other machinery of an estimated value of $5,800. Four months' returns in 1895 gave 68 oz. 12 dwt. of gold from 112 tons 4 cwt. rock crushed ; two months' work in 1896 gave 52 oz. 18 dwt. from 107 tons rock crushed.

NORTHUP GOLD MINING CO., Ltd.

Incorporated 1895. Authorized Capital, $100,000 in shares of $100.

Directors :

Clarence H. Dimock. | E. Norman Dimock.

Head Office Clarence H. Dimock, Windsor, N.S.

Holds a number of gold areas at Central Rawdon, Hants County, Province of Nova Scotia. Equipped with 10-stamp mill, driven by 40 h.p. engine and 50 h.p. boiler ; 1 double cylinder Lidgerwood hoisting engine with 36 in. diameter drums ; steam pumping plant, etc. Working plant being extended in 1897.

O. K. GOLD MINING CO., Ltd.

Authorized Capital $1,000,000.

Officers :

W. H. Warner, *Pesident.*

Joseph L. Warner, *Vice-President.* | W. D. Vincent, *Treasurer.*
H. M. Stephens, *Secretary.*

Head Office : 503 Trader's Block, Spokane, Wash.

Mines Office : Rossland, B.C. (P.O. Box 476.)

Owns and operates the O. K. mineral claim, situate about 2¼ miles from the town of Rossland, Trail mining district, British Columbia. Development (at date of report) consisting of tunnels, winzes, cross cuts and levels. amounted to 1,339 ft. Equipped with 10-stamp mill, Blake ore breakers, two 40 h.p. boilers, Rand 5-drill compressor, diamond core drills, and other plant. The ore is carried to mill by gravity tramway 600 ft.

OMENICA CONSOLIDATED HYDRAULIC MINING CO.

Incorporated 1896. Authorized Capital $100,000 in shares of $1.00.

Directors :

Wm. Munsie, Victoria, *President.*

Thos. B. Hall. | Dr. G. L. Milne. | J. W. Ladd. | R. T. Williams.
J. W. Moore. | Capt. C. E. Clark.

Head Office : J. T. Bethune, Sec.-Treas., Victoria, B.C.

Mines Office : Capt. C. N. Black, C. and M.E., Omenica, B.C.

Formed to acquire and work seven placer claims and leaseholds, situate on Manson, Black Jack Gulch, and Lost Creeks, in the Omenica District, Province of British Columbia. Being opened up.

OTTAWA HYDRAULIC MINING AND MILLING CO., Ltd.

Incorporated 1895. Authorized Capital $250,000 in shares of $5.00 each.

Directors :

Lt.-Col. Joshua Wright. | Capt. M. N. Garland. | W. C. McGillivray.

Mines Office: W. A. Jamieson, North Bend, B.C.

Formed to acquire and work certain auriferous bench claims in the Province of British Columbia, particularly a location on the east bank of the Fraser river, between Anderson river and Four Mile Creek, and about the centre of the Boston Bar flat, in the District of Yale. From careful tests made it is estimated that the average value of the ground to be worked will be at least 25 cents per yard. In 1895 and 1896 work was mainly centred in the construction of a flume three miles in length, connecting the claims with Four Mile creek, from which the company has secured ample water for hydraulicing in 1897.

OXFORD GOLD MINING CO.

Incorporated 1895. Authorized Capital, $125,000.

Directors:

G. J. Partington. | C. E. Willis. | C. H. Covert.

Head Office: G. J. Partington, Manager, Musquodoboit Harbor, N.S.

This company owns 63 gold areas situated at Lake Catcha District, near Musquodoboit Harbor, and 25 miles east of Halifax, Nova Scotia. The working plant comprises:—A steam 10-steam mill complete, with Blake breaker; ore bins; automatic feeders, etc.; 1 5-drill duplex air compressor; 3 engines, one 12 x 24, one 10 x 16, and one 9 x 12; two 40 and two 20 h.p. boilers; hoists, pumps, and everything necessary to a well equipped mine, the machinery and buildings being of a value of over $14,000. Twenty-five men employed. Official returns of the gold yield are:—

Year.	Rock crushed.			Gold Yield.					
1882.....	615	tons	giving	1,017	ounces,	2	dwts.,	3	grs.
1883.....	1,472	"	"	2,575	"	15	"	19	"
1884.....	2,287	"	"	2,019	"	19	"	..	
1885.....	1,670	"	"	1,094	"	14	"	.	
1886.....	492	"	"	1,683	"	18	"	15	"
1887.....	886	"	"	3,050	"	2	"	..	
1888.....	1,559	"	"	2,161	"	15	"	..	
1889.....	767	"	"	588	"	2	"	..	
1890.....	901	"	"	779	"	5	"	..	
1891.....	2,177	"	"	580	"	8	"	..	
1892.....	2,124	"	"	764	"	7	"	14	"
1893.....	1,646	"	"	811	"	..	"	..	
1894.....	1,643	"	"	944	"	18	"	.	
1895 (6 months)	396	"	"	100	"	16	"	..	
1896 (3 months)	90	"	"	31	"	19	"	..	

PALO ALTO GOLD MINING CO. Ltd.

Incorporated 13th May, 1896. Authorized Capital, $1,000,000 in shares of $1.00.

Directors:

Leonard H. Solley, *President.*

A. P. Luxton. | Benjamin C. Nichols. | W. G. Estep. | E. J. Salmon.
W. T. Hardaker.

Head Office: C. D. Mason, Sec.-Treas., Five Sisters Block, Victoria, B.C.

Mines Office: E. N. Bouche, Mine Supt., Rossland, B.C.

Owns and operates the Palo Alto mineral claim in the Trail Creek District, Province of British Columbia. Being developed.

PHILLIPS ARM GOLD MINES, Ltd.

Incorporated 1897. Authorized Capital, $500,000 in $1,000,000 shares of 50 cents each.

Directors:

Chas. F. Law. | H. Rhodes. | Jas. P. Syme.

Head Office: Jas. G. Syme, Secretary, 625 Hastings St., Vancouver, B. C.

Owns and has done some development work upon the "Alexandria," "Highland Laddie," "Duke" and "Duchess," and other claims, situated on Phillips Arm mainland coast of British Columbia, 120 miles north-west of the city of Vancouver.

POORMAN GROUP.

Owners:

N. L. Davenport *et al*, Nelson, B.C.

The claims comprise the "Poorman," "Hardscrabble," "White," "Myemer," "Hardup" and "Election" on Eagle Creek, six miles west of the town of Nelson, British Columbia. Mr. Carlyle, Provincial Mineralogist, reports: Most mining work has been done on the Poorman and White claims, on two distinct quartz veins, 1,200 feet apart, strike, about N. and S. dip, easterly 40°-50°, in a greenish coarse-grained hornblendic granite.

The Poorman vein has the usual characteristics of quartz fissure veins in eruptive rock, being persistent, but very irregular in width, varying from a few inches to five and six feet of milky-white compact quartz, now holding a considerable amount of sulphides, or copper and iron pyrites, with, in parts, a little galena. In the upper workings the ore was found to be very free milling, and several thousand dollars' worth of magnificent gold-bearing quartz was taken from a part of the vein 5-6 feet wide, but now, as depth is attained, the ore has become less free milling, and the value is going more into the sulphides that are saved by concentration. About $100,000, it is reported by the owners, have been taken from the comparatively small area of the vein so far worked, and now the average value of the ore saved by amalgamation, is from $12 to $14 per ton, while the concentrates assay from $26 to $30 per ton, with the proportion of concentration about 10 tons to 1, so the total yield value of the ore is about $16 per ton of ore mined.

On the Poorman workings there are:—The main tunnel cross-cutting for 90 feet, following along a fault wall that faults the vein at intersection, 5 feet. To the south the drift runs about 180 feet, with ground stoped out nearly all the distance, and practically to the surface, the vein varying from a stringer of quartz to 5 and 6 feet in width, and now 6–8 inches wide in face of drift. To the north the drift is 325 feet long,

with thus about 500 feet of work along the ledge, and at 30 feet is a winze 85 feet deep (full of water), in which the vein is said to average 2 feet throughout its length, thus exploiting new ground.

There are several faults exposed in these workings, causing dislocations of a few feet, and at 110 feet, in the north drift, occurs one nearly parallel with the vein but steeper, up which the lower part of the vein has been lifted 6–8 feet. Other faults run transverse to the vein, but the throw has not been uniform in direction, being in one place to the east, in another to the west. Much stoping clear to the surface, 70–80 feet, has also been done along this drift, with an average width of about 2 feet, and at the face the vein is a few inches wide, but there is no reason why the vein, on continuing the drift either way, should not widen out again, as was the case several times before.

Tunnel No. 2 was in about 140 feet, having passed through a small vein from which 50 tons have been mined from a 40-foot drift and stope along it, and at 450 feet it is calculated to strike the vein 300 feet on the pitch below the upper workings.

On the White claim another, but smaller, vein has been exploited by a tunnel along it, about S. 25° E., 140 feet long, from which about 200 tons of ore have been accumulated on the dump, consisting of white opaque quartz containing a good percentage of very coarse iron pyrites, some copper pyrites, and in parts galena. In the altered granite country rock, are developed cubes of iron pyrites. In one place the vein was 2 to 3 feet wide, while along part of the tunnel there were two small veins, with breccia between and small stringers of quartz running into the country rock. About 80 tons of ore have been milled, which yielded, it is said, somewhat higher returns than the Poorman ore; but this vein has not yet been really developed to an extent to give much idea of its size and value. No work was being done on the property at the time of examination.

A waggon road, 2½ miles long, has been built from the railroad bridge over the Kootenay River, where is a magnificent water power, to the mill, and thence 2,000 feet to the main tunnel. From Eagle Creek, flowing down past the mine and mill, water is carried in an 8 by 20-inch flume to the penstock, and thence under a 200-foot head, in a 11-inch steel pipe, to the mill; but a sufficient amount of water to keep the mill working is now only obtained for part of the year, or for April, May, June, and July, when a 150 to 175 h.p. is available; but while more water can be got by building a flume 2 miles long to Sandy Creek, it is doubtful if a continuous mill run throughout the year can be got without erecting a mill at the Kootenay River, where are abundant water and power, easily accessible by waggon road. In the mill are (*a*) Blake crusher above the bins; (*b*) two automatic feeders; (*c*) two batteries of 5 stamps, each 850 lbs., made by Chicago Iron Works Co., with two outer copper plates 10 feet by 4 feet 8 inches, as well as the inside coppers, mercury traps, etc.; (*d*) three end-shake vanners, 12 feet by 4½ feet, smooth belts, made by the Joshua Hendy Co., San Francisco; (*e*) a 4-foot Pelton water wheel running the mill and air compressor; (*f*) a three-drlll Rand air compressor, made at Sherbrooke, Que., with receiver and 2-inch pipe to tunnel No. 2.

PRINCESS GOLD MINING CO. OF ONTARIO, Ltd.

Incorporated 1896. Authorized Capital, $500,000.

Directors :

Ewen MacKenzie, *President.*
John Flett. | Henry O'Brien. | Henry Lowndes. | Thos. Shortiss.

Head Office : J. R. McKenzie, Secretary, Room 106, McKinnon Building, Toronto.

Owns and operates Location 118 D on Black Sturgeon Lake, 2½ miles north of Rossland Station, on the C. P. R. and 7½ miles from the town of Rat Portage. Being opened.

QUESNELLE AND CARIBOO GOLD FIELDS EXPLORATION SYNDICATE, Ltd.

Registered 1896. Authorized Capital £12,000 steg., in shares of £50.

CANADIAN OFFICE:

Chas. F. Law, M.E., Vancouver.

Head Office:

Hartshead Chambers, Sheffield, England.

Formed to carry on mining in the neighborhood of the mouth of Quesnelle River, B.C., and to purchase or otherwise acquire, and to sell, dispose of and deal with mines and mining rights of all kinds and undertakings connected therewith, and in particular the mining license, dated the 6th day or June, 1895, granted to Mr. Charles Frederick Law, of Vancouver. Being developed.

QUESNELLE RIVER GOLD DREDGING CO., Ltd.

Registered 1897. Authorized Capital £55,000, in shares of £1.

Directors:

Henry Duncan, | Geo. F. Farrer. | Major General P. D. Henderson. Frank Spencer

CANADIAN OFFICE:

Hugh McLean, Resident Manager, Vancouver, B.C.

Head Office:

Francis W. Croft, *Secretary*, 4 Draper's Gardens, London, E.C.

Formed to acquire the rights and powers granted under a lease from the government of British Columbia for a period of 20 years from 30th June, 1896, at a rental of £150 per annum, granting the exclusive right of dredging for gold on three miles of the Quesnelle river, Cariboo District, Province of British Columbia, as follows:— Commencing at a post marked Joseph Reichenback on the south bank of the said river about 10 chains below the mouth of the Beaver River, adjacent to the Main Quesnelle Gold Dredging and Mining Company's claim, thence up the river a distance of three miles to Drummond's claim, the said claim of three miles covering the bed and bars of the said river from low watermark to low watermark according to plan.

The purchase consideration was £40,000, payable in fully paid shares of the company, or partly in cash and partly in shares, at the option of the Directors.

RAT PORTAGE GOLD MINING CO., Ltd.

Incorporated 1896. Authorized Capital $1,000,000 in shares of $1.00.

Directors :

D. C. Cameron, *President.*

Angus Carmichael, Hugh Armstong. | J. H. Neeve, C. W. Chadwick. | Henry Langford. Geo. Barnes.

Head Office : John H. Challoner, Secretary, Rat Portage.

C. H. Park, *Mining Engineer.*

Owns and is developing Location 640 P., known as the "Master Jack" gold mining claim, comprising 37 acres, Blind Lake, Lake of the Woods District, Province of Ontario. 14 persons employed in 1896.

RED POINT GOLD MINING CO., Ltd.

Incorporated 1896, Authorized Capital, $1,000,000 in shares of $1.00.

Directors :

George P. Brophy, C.E. Sandford H. Fleming, C.E. | John W. McRae. W. A. Allan. Harold Kennedy. | Hector McRae. Wm. McNally.

Trustees :

J. K. Clark. | P. G. Nash. | J. Fred Ritchie.

Mines Office : Rossland, B.C., P. G. Nash, Sec.-Treas.

Owns and is developing the "Red Point" mineral claim on Lookout Mountain, Trail District, Province of British Columbia.

REGINA (Canada) GOLD MINE, Ltd.

Incorporated December, 1894 ; reconstructed January, 1896. Authorized Capital, £150,000 in shares of £1, of which £127,000 is issued.

Directors :

Lieut.-General Wilkinson, C.B., *Chairman.*
H. Chester Masters. | J. Mieville. | W. Rivett-Carnac.

CANADIAN OFFICE :

Lieut.-Gen. Wilkinson, C.B., Managing Director, White Fish Bay, via Rat Portage, Ont.

John Leechman, A.R.S.M., *Superintendent.*

Head Office :

J. L. Middleton, Secy., 32 Abchurch St. Lane, London, E.C.

Owns Mining Location 566 P (comprising 35 acres), and 567 P (comprising 42 acres), at White Fish Bay, Lake of the Woods, Province of Ontario, on which is the Regina mine worked by the company. Vein 4 ft. worked averages $22 per ton. 55 persons employed in 1896. Equipment comprises: Two multitubular boilers, 80 and 40 h.p. respectively; one Rand (2 drill) and one Ingersoll (4 drill) compressor, Ingersoll and Rand air drills, Bacon hoisting engine, cyl. 6 in. x 8 in., drum 2 ft. 6 in.; 3 Northey and one Cameron sinking pumps, Blake ore breaker, and an electric lighting plant. 10-stamp mill (Steam); concentrates and tailings treated by the McArthur-Forrest cyanide system.

RICHARDSON GOLD MINING CO.

Paid up Capital, $100,000. Organized 1892.

Directors :

George A. Pyke, *President.*

A. N. Whitman. | Thos. Spry.
S. Sweet. | S. R. Griffin.

Head Office : A. B. Cox, Manager, Isaac's Harbor, N.S.

Owns 126 gold areas at Gold Brook, in the Stormont District, Nova Scotia. Mine equipped with 80 h.p. boiler and comp. engine. Double skip tracks in main shaft. Skips self dumping, 32 ft. above mouth of pit. Ore breaker at deck-head. Ore falls from breaker through a bin to cars. Cars hauled by steel cable over steel rails ¼ mile to mill.

Mill, forty (850 lb.) stamps; one 60 and one 80 h.p. boiler; Corliss engine, 16 x 42 in.

All buildings, offices and stables lit by company's electric plant, also four main loading stages in hoisting shafts lit by electric lights.

Main shaft, 200 ft. deep; underground works, 600 ft. long; width of ore belt from 9 to 20 feet.

Cost of mining and milling, with 20 stamps, $2.05 per ton; with 40 stamps, about $1.65 per ton, including all charges. Gold yield, 1893: 2,237 ounces, 18 dwt., 10 grs, from 6,048 tons quartz crushed; 1894: 1,674 ounces, 10 dwt., 10 grs., from 7,016 tons rock; 1895: 1,677 ounces, 7 dwt., from 10,383 tons rock crushed; 1896: from 1st January to December 31st, 2,550 ounces gold.

ROSSLAND RED MOUNTAIN GOLD MINING CO., Ltd.

Incorporated 1896, under the laws of the State of Washington. Authorized Capital, $1,000,000.

Directors :

F. Couch Flanders, Portland, Ore., *President.*

C. W. Ladd. | Allen Lewis. | E. Packard. | Theo. Wilcox, Chas. Sweeney.

Head Office: F. Lewis Clark, Sec.-Treas., Spokane.

Owns and operates the "Red Mountain" mineral claim, comprising 47 acres, on Red Mountain, Trail District, Province of British Columbia. Being opened.

SAW-BILL LAKE GOLD MINING CO., Ltd.

Incorporated 1896. Authorized Capital, $125,000, in shares of $1.00.

Directors:

John S. Tilden, Hamilton, Ont., *President.*

H. A. Wiley.	F. S. Wiley.	H. N. Kittson.	John Hoodless.
Frank C. Bruce.	Thos. W. Lester.	H. C. Beckett.	W. Southam.

Head Office: H. N. Kittson, Sec.-Treas., Hamilton, Ont.

F. S. Wiley, Port Arthur, *Managing Director.*

Owns and operates mining locations 313X and 314X, situated on Saw-Bill Lake, an arm of the Seine River, Rainy River District, Province of Ontario. The vein worked at the surface has a width of about 4 feet. It strikes N. 9°E. astronomical, and can be followed in a southerly direction for 300 feet, where it bends to a direction S. 24° W. for another 300 feet, gradually failing in width until it becomes very small. In a northerly direction it has been traced about 900 feet, beyond which point the surface falls away into a swamp. The hade of the vein is easterly at an angle of a little over 10 degrees from the vertical. Though running 'with the formation' there seems to be no doubt about the true fissure character of the vein. The walls are well defined, the hanging-wall particularly so, often showing slickensided surfaces and a parting of crushed chloritic material between the wall and the vein-matter. On the foot-wall, there is a certain amount of mingling of the vein-matter with the inclosing rock, and a number of stringers and small parallel veins, so that the vein contents do not come away so freely from this wall as from the hanging-wall. Opened by shaft, down at date of report, 120 feet. Equipped with 10-stamp mill and other plant. Statement of accounts under date of 9th November, 1896, shows:—

To Treasury Stock subscribed		$30,000 00
Cr.		
By Paid Transportation Charges	$1,123 48	
" Wages	3,288 76	
" For Machinery	1,206 95	
" For Provisions and Supplies	4,185 67	
" Salaries	550 00	
" Sundry Expenses	200 28	
		$10,555 14
Balance in Bank of Montreal		$19,444 86
Merchandise		$ 312 26
Canoes		42 00
Powder		360 00
Machinery		1,300 00
Mining Tools, etc		500 00
Stores and Provisions		600 00
Buildings		1,000 00
Charcoal		75 00
		$4,189 26

SCRAMBLE GOLD MINING CO. OF ONTARIO, Ltd.

Incorporated 1896. Authorized Capital, $1,000,000.

Directors :

L. W. Partridge, Detroit.

John Coates, C.E., Ottawa. | R. H. Agur, Winnipeg.
H. H. Beck, Winnipeg. | D. Crawford, Montreal.
S. V. Halstead, Rat Portage. | E. D. Williamson, Detroit.

Head Office : S. V. Halstead, Rat Portage, Ont.

Owns and operates the "Scramble" mine, Lake of the Woods, Ontario, on which development is proceeding.

SEINE RIVER MINING AND DEVELOPMENT CO., Ltd.

Incorporated 1896. Authorized Capital, $1,000,000 in shares of $1.00.

Directors :

F. E. Gibbs. | J. G. King. | H. A. Wiley. | J. J. O'Connor.
W. H. Lamb. | T. B. Greening. | H. C. Baker.
W. H. Plummer. | C. W. Spencer.

Head Office : F. E. Gibbs, Port Arthur, Ont.

Owns and operates Mining Location 219, comprising 76 acres, situated on the west side of Lake Harold, about two miles north of the Seine River, in the Rainy River district, Province of Ontario. A number of veins have been opened and a five-stamp mill and other machinery is in place.

SEINE RIVER (Ontario) GOLD MINES, Ltd.

Incorporated 22nd July, 1896. Authorized Capital, £100,000 in shares of £1.

Directors :

Lieut.-Col. Sydney F. Foster.
Jas. Juman. | Richard Pearce. | A. Galt Ross. | Lt.-Col. Swaine.

CANADIAN OFFICE :

A. W. B. Whiteley, E. M., Manager, Ferguson Mine, via. Mine Centre, Rainy River District, Ontario.

Head Office :

Wm. Murdock, *Secretary*, 62 Broad St. Ave., London, E.C.

Owns and operates Mining Location A.L. 110, 111, and K 223, comprising 40 acres each, in the Rainy River District, Province of Ontario. Being opened at date of report by five shafts down 100 ft., 50 ft., 100 ft., 75 ft. and 40 ft. respectively. 50 persons employed in 1896. Small prospecting plant only, including mill of three stamps; to be enlarged in 1897.

SEYMOUR CREEK GOLD MINING CO., Ltd.

Incorporated 1896. Authorized Capital, $1,000,000 in shares of $1.00.

Directors:

H. Heffering. | F. S. Timberlake. | S. I. Timberlake.

Head Office: F. S. Timberlake, President, Vancouver, B.C.

Owns and is developing some eight claims on Seymour Creek, Vancouver Mining District, British Columbia.

SLOUGH CREEK MINING CO.

Incorporated under the laws of the State of Washington, in January, 1892. Authorized Capital $500,000, divided into 500,000 shares of a value of $1 each.

Directors:

W. H. Fife, *President.*

J. B. Clift. Hon. Henry Drum. | J. D. Caughran. | E. N. Ouimette. W. H. Ellis.

Head Office: W. F. Sargent, Secretary, Tacoma, Wash.

Mines Office: Chas. Ramos, Manager, Barkerville, B.C.

Controls and operates a fifteen year lease of a grant from the local government, embracing an area three miles in length, by one-half mile in width, in the bed or valley of Slough Creek, in the district of Cariboo, Province of British Columbia. Reporting on the work done in 1896 the President writes:—

"The work of development upon the property has been continuously prosecuted during the entire year, but owing to the open winter season progress was slow during the early part of the year. Development work has been confined principally to the running of drainage tunnels, for the double purpose of draining the surface water from the high rock at the mouth of Nelson Creek, that it may be worked for its gold, and for the further purpose of draining the water so that we may proceed with the sinking of our proposed bedrock shaft and drive out to the old channel. The character of the ground through which we have been running the tunnels has been that of a loose wash, with large boulders throughout the entire distance and filled with surface water.

In order to complete the work of running the lateral extension of the main drain tunnel it was found necessary to open for its entire length, about 700 feet, an old abandoned drainage tunnel run by Nelson Creek miners many years ago, which in caving had not only drawn the surface water to it, since its abandonment, but had allowed water to accumulate as in a reservoir. This was a laborious undertaking and occupied much time, but it has been of great benefit. It was further found necessary to run a great "balloon drive" between the lower tunnel and the old Nelson Creek

tunnel referred to. As a result of these two undertakings the lower tunnel is nearly free from water, and the work of continuing it to the bedrock is progressing favorably, and as soon as the bedrock has been reached it is our intention to begin the construction at once, of a working bedrock shaft to the old channel.

SOUTH WALES LEASE CO.

Organized September, 1890.

Owners :

Harry Jones. | Watkin C. Price. | F. J. Tregillus.

Mines Office : Harry Jones, Manager, Stanley, Cariboo, B.C.

Operates a claim commencing a little above the town of Van Winkle and extending half a mile up Lightning creek, in the Cariboo district, Province of British Columbia. The pay dirt is on bed-rock, 90 ft. below creek surface, and is hoisted out of a shaft by friction pulleys and a drum, power being furnished by an overshot wheel, 14 ft. diameter and 3½ ft. breast. At date of report a drain 1,500 ft. long to bottom of shaft had been completed and 150 ft. more would be required to cut surface water. To date about 200 ounces has been taken out.

STELLARTON GOLD MINING CO., Ltd.

Incorporated 1894. Authorized Capital, $20,000, in shares of $10,00.

Directors :

John McQuarrie, Stellarton, N.S.

James Keith, New Glasgow. | W. Ormond, Thorburn, N.S.
Duncan McGregor, Westville, N.S. | John G. McQuarrie, Sherbrooke, N.S.

Head Office : Geo. E. McDonald, Secretary, New Glasgow.

John McQuarrie, Stellarton, *Man. Director.*

Formed for the purpose of mining in the Sherbrooke District, Province of Nova Scotia. Property contains 36 gold areas. 15 stamp mill. Returns for seven months in 1895 gave 946 oz. 6 dwt. from 1,930 tons rock crushed ; and 5 months' work in 1896 105 oz. 5 dwt. 9 grs from 343 tons rock milled.

ST. ELMO GOLD MINING CO.

Incorporated June, 1895. Authorized Capital, $1,000,000.

Directors :

F. C. Loring, *President.*

E. D. Olmsted. | F. E. Snodgrass. | George T. Crane. | W. R. Rust.

Head Office: F. E. Snodgrass, Secretary-Treasurer, Spokane, Wash.

Mines Office: F. C. Loring, Rossland, Trail Creek, B. C.

The property of this company consists of the St. Elmo mining claim, situated on Red Mountain, Trail Creek sub-division of west Kootenay mining district, Province of British Columbia. Operations are conducted on a quartz vein carrying $8 in gold, 10 per cent of copper, and 5 ounces of silver to the ton, the mining work at date of report consisting of three tunnels in, at date of report, 275 ft., 200 ft., and 80 ft. respectively, and one shaft down 30 ft. Twenty persons employed.

STYNE CREEK CONSOLIDATED GOLD GRAVELS CO., Ltd.

Incorporated 1895. Authorized Capital, $250,000.

Directors:

R. G. Tatlow. | Edward Mahon. | C. Smith.

Head Office: Vancouver, B. C.

Formed to acquire and hold mining leases of the lands known as the Van Winkle Bar, in the Yale District, and all the water rights, privileges, &c., held at present by the Van Winkle Consolidated Hydraulic Mining Co., Ltd., and also a mining lease of a claim situated on the right bank of the Fraser River, in township 15, range 27, west of the sixth I. M., in British Columbia, and all water rights, privileges and assets held at present by the Styne Creek Gold Mining Co., Ltd.

SULTANA GOLD MINE.

Owner and Manager:

John F. Caldwell, Winnipeg.

Mines Office: Sultana Mine, via Rat Portage, Ont.

The Sultana mine, known as location 42X, is situated on Sultana island on the north shore of the Lake of the Woods. Prospecting was commenced by the present owner in 1890, but mining was not begun until March, 1892. Equipped with a 20-stamp mill, driven by 60 h.p. Waterous engine and a Waterous steel tubular boiler; stamps 850 lbs., drop 90 per m.; Tulloch automatic feeder; Blake ore breaker; improved Frue vanners, etc. The mining plant includes a Jenckes hoisting engine, Rand air compressor, and Little Giant rock drills, etc. About 50 persons employed.

THOMPSON RIVER HYDRAULIC MINING CO., Ltd.

Incorporated 1893. Authorized Capital, $100,000, in shares of $10.00.

Directors:

John Hendry. | J. W. Vaughan. | Robt. Jardine.
All of New Westminster, B.C.

Head Office: J. W. Vaughan, Managing Director, New Westminster, B.C.

Formed to acquire and work certain placer claims on the Thompson river and its tributaries, Province of British Columbia. During 1894 the company acquired three leases on Tranquille river, about 12 miles from Kamloops, built a dam, flume and ditches, and placed a plant capable of moving 2,000 yards per day. It was only able to get a partial clean-up owing to the early frost, but succeeded in proving a portion of the ground, being 100 feet above the water level, which gave a result of about 50 cents per yard.

TOUQUOY GOLD MINE.

Estimated Capital invested to date, including purchase of property, machinery, erection of buildings, development of mine, labor, etc., $50,000.

Owner:

Damas Touquoy, Moose River Gold Mines, Musquodoboit Harbour, Halifax County, N.S.

Owns and operates the Touquoy gold mines, in the Caribou District, Halifax Co., Nova Scotia, containing a leasehold from the Crown covering 55 gold areas. Mines worked since 1877; the present owner reports that during the past seven years he has won gold to the value of $110,000. Equipped with 15-stamp mill driven by a Little Giant turbine, 40 h.p.; stamps weigh 675 lbs., drop 50 to 60 per m., and other plant. In 1894 the gold yield was 342 oz. 12 dwt. 17 grs. from 4,131 tons rock crushed; 1895, 404 oz. 19 dwts. 12 grs. from 5,174 tons rock crushed; 1896, 629 oz. 9 dwt. from 5,887 tons milled.

TRAIL MINING CO., Ltd.

Registered 1894. Authorized Capital, $250,000.

Officers:

H. P. Mason, Frankfort, Ky., *President.* G. E. Milligan, Chicago, *Secretary.*

Mines Office: Rossland, B.C.

Owns and operates the "Columbia and Kootenay," the "Tip Top" and "Copper Jack" mineral claims in the Trail District, Province of British Columbia. Being opened up and equipped with machinery at date of report.

TUDOR GOLD MINING CO., Ltd.

Incorporated 1894. Authorized Capital, $150,000, divided into 15,000 shares of a value of $10 each.

Directors :

Chas. F. Ayer, *President*, Lowell, Mass.

James C. Ayer, New York. | S. W. Thurlow, Lowell. Mass.
Fredk. Taylor, Lowell, Mass. | J. E. Hardman, Halifax, N.S.

Head Office : S. W. Thurlow, Treasurer, Lowell, Mass.

Mines Office : Waverley, N.S.

The company controls, under lease from the local Government, a property containing over 100 gold areas, situate in the Waverley District, Halifax County, Province of Nova Scotia. Mine ten miles from the city of Halifax. 75 men employed. 20-stamp mill, driven by compound condensing steam engine ; one compound condensing duplex 10-drill Rand compressor ; one double cylindered, double drum winding engine built by the Jenckes Machine Co. (cyl. 8 in. x 12 in., drum 42 in. x 36 in.) ; one 12 in. x 24 in. Forster ore breakes, with a capacity of 120 tons in 10 hours ; two 50 h.p. horizontal tubular boilers, and one upright 25 h.p. boiler ; stamp mill equipped with "Golden Gate" and "Perfection" concentrators.

In 1895, from January to September, the yield reported for royalty was 989 oz. 7 dwt., from 4,457 tons rock crushed ; no returns received for 1896.

TULAMEEN MINING CO., Ltd.

Incorporated 1894. Authorized Capital, $20,000.

Directors :

W. B. Stephens, Montreal. | A. Fleck, Ottawa. | C. Berkeley Powell, Ottawa.
W. Harris, C.E., Ottawa. | W. L. Hogg, Vancouver.

Head Office : W. L. Hogg, Secretary, Vancouver, B.C.

Formed to acquire and operate hydraulic claims in British Columbia. Property being opened up.

VICTORIA CONSOLIDATED MINING CO., Ltd.

Incorporated by an Act of the Legislature of the Province of British Columbia, 1895.
Authorized Capital, $300,000.

Directors :

Wm. McKenzie, Toronto.

Geo. A. Cox, Toronto. | Thos. G. Holt, Montreal.
Donald D. Mann, Montreal. | Wm. Wilson, Victoria.

F. S. Barnard, M.P., Victoria.

Head Office: F. Nicholls, Secretary, 65 Front St. W., Toronto.

Mines Office: Forks Quesnelle, Cariboo, B.C.

The property comprises hydraulic ground on the south side of the South Fork of the Quesnelle river and adjoining the Hop E. Tong Company on Dancing Bill Gulch, commencing at a stake placed about 20 feet northwesterly from the Hop E. Tong Company's tank, where they take water into their hydraulic pipe, thence extending in a westerly direction one mile, thence northerly one-fourth of a mile, thence easterly one mile, thence southerly one-fourth of a mile to the point of commencement, as indicated by stakes at the four corners, and which is held under a lease from the Crown, dated 6th November, 1890, for a term of twenty years at the yearly rental of fifty dollars, save and accept thereout that mining ground known as the "Loo Quong Ching Tong" line claims, containing twelve acres, more or less, on Dancing Bill Gulch, and which said ground was demised by the Lieut.-Governor in Council to the Cariboo Hydraulic Mining Co., Ltd.

WAR EAGLE CONSOLIDATED MINING AND DEVELOPMENT CO., Ltd.

Incorporated 1896. Authorized Capital $2,000,000.

Directors:

George Gooderham. | T. G. Blackstock. | Geo. A. Cox.

Head Office: E. J. Kingstone, Secretary, Toronto.

Mines Office: J. B. Hastings, E.M., General Manager, Rossland, B.C.

Formed to acquire from the War Eagle Gold Mining Co. the War Eagle mine, Trail District, and other mineral claims and mines in the Province of British Columbia. The ore is mined is a pyrrhotite containing calcopyrite assaying about two ounces in gold, four ounces silver, and five per cent. copper. The output up to November 15th, 1896, is officially reported at follows:—

	Tons.
1894	199,776
1895	1,048,545
1896 (to Nov. 15th)	806,182

The dividends paid by the War Eagle Gold Mining Co., the former owner, were:—

February 28th, 1895	$32,500
June 14th, "	50,000
August 5th, "	50,000
April 8th, 1896	25,000
October 15th, "	30,000

The working at date of report comprised: Tunnel No. 1, in 950 ft.; No. 2, 1,150 ft.; No. 3, 850 ft.; raise between No. 1 and No. 2, 140 ft. on incline. Average width of vein worked, eight feet.

The equipment at date of report consisted of :—
Boilers—Two 100 h.p.
Compressor—One Rand 20-drill.
Drills—Eight Ingersoll-Sergeant.
Pumps—One Knowles, 6 x 5⅜ in. by 3¾ in.—10.
Hoisting Engine—One built by Fraser & Chalmers, having 2 cyl. 9 x 12 in.; friction clutch.

The output of the mine is shipped to the British Columbia Smelting and Refining Gold Co. at Trail, B.C.

WEST LE ROI AND JOSIE MINING CO.

Incorporated 1895. Authorized Capital, $500,000.

Directors :

D. Holzman, *President.*

G. H. Casey.	S. Silverman.	C. S. Vorhees.
C. G. Smith.	J. L. Wilson.	H. M. Stephens.
J. M. Burke.	J. B. Jones.	Ross Thompson.

Head Office : H. M. Stephens, Treasurer, Spokane.

Mines Office : John M. Burke, Man. Dir., Rossland, B.C.

Owns and operates two claims on Red Mountain, Trail District, Province ot British Columbia. Being opened. Tunnel, in 125 ft.; three shafts, 40 ft.; pits and open cuts aggregating 300 feet at date of report.

Supplementary List of Gold Mining Companies.

Abe Lincoln Gold Mining Co., Ltd.—Capital, $1,000,000. Shares $1.00 each. *Directors:* Frank Guse, R. Dalby Morkill, W. T. McDonald. *Head Office:* Rossland, B. C. Formed to carry on mining in British Columbia.

Alberta Gold Mining Co.—Incorporated 1896. Authorized Capital, $1,000,000. *Head Office:* Spokane, Wash. Formed to carry on mining in the Province of British Columbia.

Abraham Lincoln Gold Mining Co.—Owns and operates certain gold areas at Gold River, Lunenburg County, Nova Scotia. Two months' working in 1895 gave 56 oz. 13 dwt. from 105 tons rock milled; 1896, three months' working, 119 oz. 0 dwt. 10 grs. from 154 tons rock crushed. *Mines Office:* D. C. Butterfield, *Manager*, Gold River, Lunenburg Co., N. S. Equipped with 10-stamp mill and other plant.

Active Mining and Development Co., Ltd. — Capital, $1,000,000. Shares $1.00 each. *Directors:* Jno. Hendry, Wm. Falls, Wm. J. McCusker, E. C. Mahoney. *Head Office:* Vancouver, B. C. Formed to acquire, by purchase or otherwise, the mineral claims known as the "Seymour" mineral claim, the "Star" mineral claim, and the "Silverdale" mineral claim, situate near Seymour Creek, in the Province of British Columbia, from the present owners thereof, either for money or fully paid-up shares of the company, or both.

Alabama Hydraulic Company.—Organized 1878. *Head Office:* H. E. Flynn, Barkerville, B. C. Owns and operates a mineral claim containing five acres on Mosquito Creek, in the Cariboo District, Province of British Columbia. Small force employed.

Albany Gold Mining Co., Ltd. — Capital, $750,0000. Shares $1.00 each. *Directors:* W. G. Kennedy, Wm. Harp, Thomas Stout, Wm. Brown, Angus McNish, D. L. McAlpine. *Head Office:* Rossland, B. C. Formed to acquire the "Albany" mineral claim, situate in the Trail Creek Division of the District of West Kootenay, in the Province of British Columbia.

Albion Gold Mining Co., Ltd. — Capital, $500,000. Shares $1.00 each. *Directors:* John James Moore, Henry Curtis Shaw, and John Walter Weart. *Head Office:* Vancouver, B. C. Formed to mine in British Columbia.

Alexandra Mining and Dredging Co., Ltd.—Incorporated 1895. Authorized Capital, $3,000,000. *Directors:* Marshall H. Alworth, Chas. Wilson, J. B. Heinrick, George Turner, J. B. Hanrahan. *Head Office:* Vancouver, B. C. Formed to carry on the business of gold mining in the Province of British Columbia.

Alf Gold Mining Co., Ltd. — Incorporated 1896. Authorized Capital, $1,000,000. *Officers:* Lloyd Harris, *President;* W. G. Elliot, *Vice-President;* W. E. Phin, *Secretary-Treasurer*, Brantford, Ont. *Mines Office:* Rossland, B. C. Owns and operates the Alf mineral claim, situated in the south belt of the Trail Creek District, Province of British Columbia.

Alhambra Gold and Copper Mining Co., Ltd.—Incorporated 1896. Authorized Capital, $600,000. *Directors:* Thornton Fell, R. T. Cooper, R. H. McMillen, H. G. Hall, and R. T. Williams. Formed to purchase the "Francis J" and the "Major" mineral claims, situate on Morning Mountain, near Nelson, West Kootenay, British Columbia, and to carry on mining. *Head Office:* Victoria, B. C.

Alki Gold Mining Company, Ltd. — Capital, $750,000. Shares $1.00 each. *Head Office:* Tacoma, Wash. Formed to carry on mining in British Columbia,

Almota Gold Mining Company, Ltd. — Capital Stock, $1,000,000. Shares $1.00 each. *Directors:* Laurence Goodacre, Daniel Morrison, Geo. T. Warren. *Head Office:* Victoria, B. C. Formed to purchase the Sunset No. 3 mineral claim, situated in the Trail Creek mining division of West Kootenay District, British Columbia, and any other mineral claims in the said district, or elsewhere in the Province of British Columbia.

Alpha Bell Gold Quartz Mining Company, Ltd.— Capital, $500,000. Shares $1.00 each. *Directors:* James B. MacLaren, Henry DePencier, Geo. E. Bower. *Head Office:* Vancouver, B. C. Formed to acquire, by purchase or other wise, the mineral claim known as the "Alpha Bell Fraction," situate in the Lillooet District, from the present owners thereof, either for money or fully paid up shares of the company.

Anniconde Gold Mining Co., Ltd. — Capital, $1,000,000. Shares $1.00 each. *Directors*: A. W. Ogilvie, Montreal; William Lovitt Hogg, Montreal; W. Barclay Stephens, Montreal; James H. Elliott, Carthage, N. Y.; John Alexander McGilvray, Carthage, New York; Henry A. Drury, St. John, New Brunswick; Thomas Bell, St. John. *Head Office:* St. John, N. B.

Alwilda Gold Mining and Development Co., Ltd. — Capital, $900,000. Shares of $1.00. *Directors:* J. W. Thornton, H. F. Arnold, John Bray. *Head Office:* Rossland. B.C. Formed to acquire the "Alwilda" mineral claim, situate in Trail Creek Mining Division of West Kootenay District, in British Columbia, and being on Green Mountain, about five miles north-west of Rossland, and other mineral claims situate in British Columbia.

Amazon Gold Mining and Smelting Co., Ltd.—Capital, $1,500,000. Shares $1.00 each. *Head Office:* Portland, Oregon. Formed to acquire by purchase or otherwise, the mineral claims known as "The Amazon" and "The Mizpha," situate in the Kettle River Mining Division, Yale District, Province of British Columbia, from the present owner, either for money or fully paid-up shares of the Company.

Ambrozine Gold Mines, Ltd. — Capital, $500,000. Shares $1.00 each. *Directors:* R. Douglas, Jos. R. Seymour, Frank S. Taggart. *Head Office:* Vancouver, B.C, Formed to prospect, examine, explore, search for and locate mines, minerals, placer claims, mineral claims, and mining property.

American Eagle Gold Mining Company, Ltd.—Capital, $1,000,000. Shares $1.00 each. *Directors:* Geo. H. Randall, Robert C. Pollett, Charles L. Mills. *Head Office:* Rossland, B.C. Formed to purchase the "American Eagle" mineral claim, situate near the North Fork of Salmon River, in the Nelson mining division of West Kootenay.

Anglo-Canadian Gold Mining and Development Company of Brantford, Ont.—Capital $90,000, in shares of 10c. each. Director: E. Todd, F. McCallum, O. Clark, P. C. Harp, D. A. McCallum. Head Office: Brantford, Ont. Formed to carry on mining in Ontario.

Arganaut Gold Mining Co. of Kootenay, Ltd.—Incorporated 1895. Authorized Capital, $500,000. Directors: A. Graham Ferguson, S. O. Richards, John G. Woods. Head Office: Vancouver, B.C. Formed to take over mining property in British Columbia, and in particular to acquire from F. C. Innes two mineral claims in the Trail Division, Kootenay District, B.C., known as the Eleanor and Londonderry claims.

Arlington Consolidated Mining and Smelting Co.—Capital, $1,000,000. Shares $1 each. Head Office: Spokane, Wash. Formed to mine in British Columbia.

Arlington Gold and Copper Mining Co., Ltd.—Capital, $1,000.000. Shares $1 each. Directors: E. A. Billenberg, J. C. Haas, G. A. Rendall. Head Office: Greenwood City, B.C. Formed to carry on mining in British Columbia.

Ashcroft and Kootenay Mining Co., Ltd. —Capital, $500,000. Shares $1.00 each. *Directors*, Chas. McLachlan, Jas. Z. Hall, Geo. Martin. *Head Office:* Vancouver, B.C. Formed to purchase the "Fish Lake," "Christiana," "Shamrock,"

"Mayflower," "Johnson," and "Vancouver" mineral claims, situate in the Yale District, and the "American Eagle" mineral claim, situate in the Lillooet District of British Columbia, either for money or fully paid-up shares, and to develop, prospect, work, and turn to account the said claims.

Bachelor Mines Company, Ltd.—Capital, $500,000. Shares $1.00 each. *Trustees*, P. N. Thompson, C. J. P. Phibbs, J. McLaren, Jas. D. Hall. *Head Office*, Vancouver, B.C.

Badger Tourmaline Consolidated Gold Mining Co., Ltd. — Capital, $1,500,000. Shares $1.00 each. Directors: R. F. Dodd, H. C. Walters, Rossland; John Lineham, Calgary. Head Office: Rossland, B.C.

Bald Indian Bay Mining and Investment Co., Ltd.—Capital, $6,000. Shares $1.00 each. Directors: Levi Crannell, William A. Clark, Angus W. Fraser, J. Beviley Smith. Head Office: A. W. Fraser, Secretary, Ottawa, Ont. Formed to acquire by purchase or otherwise any lands or rights or interests in lands for any of the purposes of the company, and any mines, minerals, mining rights or mining locations in the Districts of Thunder Bay and Rainy River in the Province of Ontario.

Bald Mountain Mining and Development Co., Ltd.—Capital, $2,500,000. Shares $1.00 each. Trustees: Thomas W. Jackson, Jas. A. McAllister, Wm. H. Kinniston. Head Office: Golden, B.C.

Ballarat Mining Company.—Capital, $125,000. Shares 25 cents each. Trustees: W. A. Galliher, Wm. Colpman, Wm. R. Ross. Head Office: Rossland, B.C.

Baltimore Gold Mining and Development Co., Ltd.—Capital, $1,500,000. Shares $1.00 each. Trustees: Colin McLachlan, Capt. Alvin Neal, Judge John L. Black, Capt. J. W. Heisner, Geo. H. Green, John Kirkup, J. T. Laidlaw. Head Office: Rossland, B. C. Formed to purchase mineral claims in the Province of British Columbia.

Barnato Gold and Silver Mining Co. of Slocan, Ltd. — Capital, $1,000,000. Shares $1.00 each. *Trustees*, W. A. Campbell, Thos. M. Daly, Wm. R. Ross. Head Office: Rossland, B.C. Formed to purchase the "Barnett," "Little Montana," and "Palaski" mineral claims, situated at the head of Lemon Creek, in the Slocan District of West Kootenay, in the Province of British Columbia, and to purchase or lease any other mineral claims in the said district or elsewhere in the Province of British Columbia.

Beaudette Mining Company, Ltd.—Capital, $600,000. Shares $1.00 each. Trustees: D. J. Darragh, A. A. McPherson, H. Thomas, D. M. Hunter, A. G. Larsen. Head Office: Sandon, B. C. Formed to work and develop the mineral claims "Beaudette (1), Beaudette (2) and Beaudette (3)," all situated near the source of McDonald Creek, about three miles from the foot of Upper Arrow Lake, West Kootenay, British Columbia.

Bean Pot Gold Mining Co., Ltd.—Registered 23rd May, 1896. Head Office: Spokane. Authorized Capital, $500,000. To carry on mining in British Columbia.

Beaver Gold Mining Co.—Authorized Capital, $750,000, in $1.00 shares. Incorporated 1896. Officers: H. Warner, President; E. D. Sanders, Vice-President; W. H. Fortier, Sec.-Treas. Owns and operates the "Trilby" (49 acres), Orillia (46 acres), Beaver (35 acres), Ohio Fraction (10 acres), total 140 acres; located in the Trail Mining District, Province of British Columbia. Mines Office: J. C. Fisher, General Manager, Rossland, B. C.

Beaver Quartz Mining Co., Ltd.—Incorporated 1896. Authorized Capital, $1,000,000. Directors: J. F. Cook, Vancouver, B. C.; Jas. A. McNair, Vancouver, B. C.; Robert Hamilton, Vancouver. Head Office: Vancouver, B. C.

Berlin Gold Mining Co.—Capital, $100,000. Shares $1.00 each. Trustees: Wm. Rolls, H. Marymont, P. G. Nash. Head Office: Rossland, B. C. Formed to carry on mining in British Columbia.

Big Bend Gold Fields, Ltd.—Capital, $2,000,000. Shares $1.00 each. Trustees: C. S. Douglass, Jno. J. Cowderey, Chas. Layland. Head Office: Vancouver, B. C.

Big Bend Gold Mining Co.—Capital $250,000. Shares 25 cents each. Trustees: F. H. Young, C. A. Lett, C. S. Douglas, J. Miller, C. Steinson, D. H. Wilson, J. E. W. MacFarlane, Charles Coulson, Jno. H. Hoare, C. O. Wickendon. Head Office: Vancouver, B.C. Formed to purchase certain mineral claims, situate in the Big Bend of the Columbia River, on or near McCullock Creek, British Columbia.

Big Buck Gold Mining Company.—Capital $1,000,000. Shares $1.00 each. Trustees: Geo. Broderins, Eugene J. Carsson, Harvey Graham, Frank Jackson, Iric W. Beverley. Head Office: Rossland, B.C. Formed to carry on mining in British Columbia.

Big Chief Mining Company—Capital $1,000,000. Shares $1.00 each. Trustees: Thomas H. Tracy, John J. Banfield, Alfred Hossack, Adolphus Williams. Head Office: Vancouver, B.C. Formed to carry on mining in British Columbia.

Big Manitou Mining and Development Co. — Capital $1,000,000. Shares, $5 each. Directors: Jas. H. Ashdown, Dawson K. Elliott, A. R. Bethune, William Georgeson, William Phair. Head Office: Wabigoon, Ont. Formed to purchase and acquire mineral location H.P. 222, in the District of Rainy River, in the Province of Ontario, and to prospect, work and turn to account the said mineral claim.

Big Six Gold and Copper Mining Co.—Capital $1,500,000. Shares $1 each. Trustees: H. McCutcheon, Angus McNish, Wm. Brown, J. C. Campbell. Head Office: Rossland, B.C. Formed to purchase the "Ajax," "Maggie No. 3," "Lottie May," "Red Rock," "Daisy," and "Lost Horse" mineral claims, situated in the Trail Creek Division of the District of West Kootenay, in the Province of British Columbia.

Black Creek Hydraulic Mining Co. of Cariboo, Ltd.—Incorporated 1894. Authorized Capital $300,000, in shares of $5.00. Directors: W. F. Salsbury, Johann Wullfsh n, Edward Mahon. Head Office: Vancouver, B C. Formed to take over and acquire mining leases of lands or mining claims in any part of the Province of British Columbia, and in particular nine tracts of 160 acres each, on Black Creek, Cariboo District, for which tracts of lands application has been made for mining leases, and a mining lease granted 15th February, 1893, of a tract of land on said Black Creek to the Black Creek Hydraulic Mining Company, and to acquire all the rights and interests of all parties interested in any mining claims on Black Creek and Club Creek, and other water privileges in connection therewith.

Black Hills Mining Co. of British Columbia, Ltd.—Capital, $100,000. Shares 10 cents each. Trustees: Moses McGregor, Thos. Shosbolt, Lawrence Goodacre, Daniel W. Gillies, Wm. K. Leighton. Head Office: Victoria, B.C. Formed to purchase the "Black Hills" mineral claim, situate in the Ainsworth mining division of the District of Kootenay, Province of British Columbia.

Black Prince Mining and Milling Company, Ltd.—Capital, $1,000,000. Shares $1.00 each. Trustees: Hector McPherson, James Hampton, Wm. Drever, J. A. Kirk. Head Office: Rossland, B.C. Formed to acquire the mineral claims "Black Prince," "King of the West" and "Queen of the Valley," in the Trail Creek mining division of West Kootenay District, in the Province of British Columbia.

Black Water Gold Mining Company, Ltd.—Capital, $500,000. Shares $1.00 each. Trustees: Griffith Griffith, Clarence Miller, D. G. Stewart. Head Office: Vancouver, B.C.

Blue-Eyed Nellie Mining Company, Ltd.—Capital, $1,000,000. Shares $1.00 each. Trustees: F. A. Baird, Norman McLeod, W. H. Bell Head Office: Rossland, B.C. Formed to take over and acquire mining leases and mining claims, and in particular the mineral claim situated in Porcupine Creek, in the Nelson Mining Division of West Kootenay, B.C., rec rded as the "Blue-eyed Nellie," and to pay for the same in cash or fully paid-up shares in the Company.

B. N. A. Mines, Ltd.—Capital, $1,000,000. Shares $1.00 each. Trustees: Robt. V. Green, Lachlan McLean, T. E. Cronin. Head Office: Kaslo, B.C.

Formed to purchase the "B.N.A.," "Humming Bird," and "Onoka" mineral claims, situated on the east side of the South Fork of Kaslo Creek, in the Ainsworth Mining Division of the West Kootenay District, British Columbia.

Blue Point Mining and Milling Co., Ltd.—Capital, $125,000. Shares 25c. each. Trustees: D. C. McMorris, Wm. Seaman, Chas. A. Wright, Eli A. Smith, Mons M. Grothe, Wm. J. White. Head Office: Kaslo, B. C. Formed to acquire and work the mineral claims known as the "Blue Point" and "Continent," situate two miles north of Sauca, on the east side of Kootenay Lake, in the Province of British Columbia.

Bonanza Gold Mining Co., Ltd.—Owners: Judge Drake, J. McB. Smith, F. Soues, John Marshall, Henry Harvey, E. Bell, C. Phair, A. W. Smith. Head Office: E. Bell, Secretary, Clinton, B. C. This company owns six mineral claims, each 1,500 x 600 ft., for which they hold Crown grants for each location. about 120 acres. Situated eight miles from the town of Lillooet, in the District of Lillooet, in the Province of British Columbia.

Bonanza Mountain Gold Mining Co., Ltd. — Capital, $1,500,000. Shares $1.00 each. Trustees: Frank Griffin, William Dirchsen, F. H. Knight, Charles Hay, Neil McCallum. Head Office: Grand Forks, B. C. Formed to acquire the following mineral claims: "Bonanza," "Mountain View," "Colorado," and "Nevada," all of which are situate in Knight's Camp, on the North Fork of Kettle River, in the Kettle River Mining Division of Yale District, British Columbia.

Boundary Creek Mining and Milling Company, Ltd.—Capital, $1,500,000. Shares $1.00 each. Trustees: G. A. Rendell, D. A. Holbrook, C. W. H. Sansom. Head Office: Greenwood City, B. C. Formed to acquire the mineral claims known as the Big Ledge, the O. B., the D. A., the S. F., the J. A. C., the G, A. R., the S. H. B., the Fred. D., situate in Providence Camp, Kettle River Mining Division, Yale District, Province of British Columbia.

Boundary Falls Mining Company, Ltd. — Capital, $500,000. Shares $1.00 each. Trustees: Wm. H. Meldrum, Albert E. Lech, Alex. Morrison, Wm. H. Morrison, Robt. Hamilton. Head Office: Vancouver, B. C. Formed to carry on the business of smelters, refiners, founders, assayers, dealers in bullion, metals and products of smelting of every nature and description, in British Columbia, etc., etc.

Boundary Helen Gold Mining Co., Ltd. — Capital $300,000. Shares $1. Trustees: T. Mayne Daly, Margaret J. M. Wood, G. T. Hodgon. Head Office: Greenwood City, B.C. Formed to carry on mining in British Columbia.

Brandon Golden Crown Mining Co., Ltd.—Capital $1,500,000. Share, $1 each. Trustees: Thos. M. Daly, Wm. J. Porter, William A. Fullers And. Kelly, Wm. A. Macdonald. Head Office: Rossland, B.C. Formed to acquire mineral claims known as "Golden Crown" and "Calumet," situate in Wellington Camp, in the Kettle River Mining Division of Yale District, in the Province of British Columbia.

Bridge River and Lillooet Gold Mining Co., Ltd.—Capital, $750,000. Shares $1 each. Trustees: E. A. Colquhoun, R. A. Lucas, Geo. Allan, Geo. A. Bower, W. J. McMillan. Head Office: Vancouver, B.C. Formed to acquire the claims of the Bridge River Gold Mining Co., Limited Liability, on or adjacent to the Bridge River, and any other claims they may see fit in such vicinity, and either for money or fully paid up shares of the Company.

Bright Prospects Gold Mining and Development Co., Ltd.—Capital $1,000,000. Shares $1. Trustees: W. H. Sinclair, John Inkster, Jr., J. Joseph Hamond, Arthur B. Buckworth, Henry M. Vincent. Head Office: Rossland, B.C. Formed to purchase the "Eldorado," and "Mena," mineral claims, situate in the Nelson Mining Division of West Kootenay District, on the south slope of Ymir Mountain, Wild Horse Creek, Salmon River country, and to purchase or lease any other mineral claims in the said division or elsewhere in the Province of British Columbia.

British American Gold Mining Co., Ltd.—Capital $1,500,000. Shares $1 each. Trustees: Robt. J. Latimer, James H. Good, Alex. Wilson. Head Office:

Rossland, B.C. Formed to acquire the mineral claims "Copper King" and "Diamond King," situated in the Nelson Mining Division of West Kootenay District, British Columbia.

British Columbia Gold Discovery Co., Ltd.—Capital, £100,000. Shares £1 each. Head Office: 12 Walbrook, London, England. Formed to acquire mines, mining rights and auriferous land in British Columbia or elsewhere, and any interest therein.

British Columbia Gold Fields Exploration and Concessions Co., Ltd.—Registered 13th March, 1895. Authorized Capital, $500,000, in shares of $5.00. Directors: J. M. Browning, H. Abbott, A. G. Ferguson, C. Wilson. Head Office: Vancouver, B.C. Formed to acquire mines and carry on mining in British Columbia.

British Columbia Gold Property Co., Ltd.—Capital, $250,000. Shares 25 cents each. Directors: Alexander J. McLellan, Robt. T. Williams, Lawrence Goodacre. Head Office: Victoria, B.C.

British Gold Mining Co., Ltd.—Capital, $1,000,000. Shares $1 00 each. Trustees: Edward Clayton, Chas. Woodward, Thomas Haddon. Head Office: Vancouver, B.C. Formed to acquire the mineral claim known as the "Cobbler," situate near Trout Lake, District of Yale, Province of British Columbia.

British Lion Mining and Milling Co.—Capital, $600,000. Directors: John Kirkup, G. A. Fraser and W. G. Ellis, of Rossland, B.C. Head Office: Rossland, B.C.

British North American Mining and Milling Co., Ltd.—Capital, $1,000,000. Shares $1.00 each. Trustees: Geo. A. Fraser, Hector McPherson, John Box, John Loraing, John H. Inkster, William R. Ross. Head Office: Rossland, B.C. Formed to acquire the mineral claims "Fraser" and "Loraing," situate on Sophia mountain, in the Trail Creek Mining Division of the West Kootenay District, in the Province of British Columbia.

British North America Mining and Development Co., Ltd.—Capital, $2,500,000. Shares, $1.00 each. Trustees: Hon. D. W. Higgins, Jas. Domville, M.P., John Cawthorn, Henry Croft. Head Office: Rossland, B.C.

British Pacific Gold Property Co., Ltd.—Capital, $5,000,000. Shares, $1.00 each. Directors: Alex. J. McLellan, R. T. Williams, L. Goodacre. Head Office: Victoria, B.C. Formed to carry on mining in British Columbia.

Broken Hill Mining and Development Co., Ltd.—Capital, $1,000,000. Shares, $1.00 each. Trustees: E. C. Traves, John C. Nelson, Robert O. Nelson. Head Office: Nelson, B.C. Formed to carry on mining in British Columbia.

Broken Three Gold Mining Co., Ltd.—Capital, $400,000. Shares, $1.00. Trustees: Cecil Smith, H. R. Cholomondeley, W. S. Moore. Head Office: Vancouver, B.C. Formed to carry on mining in British Columbia.

Brown Bear Gold Mining and Development Co., Ltd.—Capital, $500,000.00. Shares, $1.00 each. Trustees: W. G. Neilson, Thos. Kilpatrick, Wm. H. Elson, J. E. Griffith. Head Office: Donald, B.C. Formed to carry on mining in British Columbia.

Bruce Gold Mining Co, Ltd.—Capital, $1,000,000. Shares, $1.00 each. Trustees: Arthur S. Goodeve, Archibald N. Patterson, William H. Goodeve, Edward Tatham, Fredk. Hagen. Head Office: Rossland, B.C. Formed to acquire the "Norway" mineral claim, situate about three-quarters of a mile west from the Town of Trail, B.C., in the Trail Creek Mining Division of West Kootenay District, British Columbia.

Buffalo Gold Mining Co., Ltd.—Incorporated 1896. Authorized Capital, $1,000,000. Officers: Dr. D. M. Campbell, President; C.M. Carpenter, Treasurer; W. J. Merryweather, Vice-President; A. M. Whiteside, Secretary. Owns and operates the "Buffalo," "Ontario," and "Great Britain No. 1," situated on O. K. Mountain, near Rossland, Trail District, Province of British Columbia. Head Office: Rossland, B. C.

Bullion Mining and Milling Co., Ltd.— Capital, $1,000,000. Shares $1.00 each. Trustees: J. C. Haas, Thos. McDonnell, Isaac H. Hallett. Head Office: Greenwood City, B. C. Formed to carry on mining in British Columbia.

Bunker Hill and Sullivan Gold Mining Co., Ltd.— Capital, $1,000,000. Shares $1.00 each. Trustees: E. J. McCune, A. E. Lyford, F. B. Salisbury, Wm. Griffith, George Nelson. Head Office: Rossland, B. C. Formed to purchase the mineral claims "Bunker Hill," "Sullivan" and "Fidelity," situate in the Nelson Mining Division of West Kootenay District, British Columbia, and any other mineral claims in the said camp, or elsewhere in British Columbia.

Burley Gold Mining Co. of Ottawa, Ltd.—Capital, $1,000,000. Shares $1.00 each. Directors: Levi Crannell, William A. Clark, Angus W. Fraser, Joseph Burley Smith. Head Office: A. W. Fraser, Secretary, Ottawa, Ont. Mines Office: J. Burley Smith, M. E., Managing Director, Rat Portage, Ont. Owns and operates the Burley mining location, Lake of the Woods, Ontario.

Butte Gold-Copper Mining Co.— Head Office: Spokane, Wash. Capital, $1,000,000. To mine in British Columbia.

Caledonia Consolidated Gold Mining Co., Ltd.—Incorporated 1896. Authorized Capital, $600,000. Directors: Austin Corbin, Jacob Hoover, H. G. Macdonald. Owns and operates the "Caledonia," "Pots," "Boomer," and "Emerald Isle" mineral claims, comprising about 50 acres each, in the Trail District, Province of British Columbia. Head Office: Spokane, Wash. Mines Office: Rossland, B. C.

Caledonia General Mining Association, Ltd. — Capital, $1,500,000. Shares $1.00 each. Trustees: M. McGregor, Chas. E. Clarke, R. Erskine, S. Schoen, A. J. W. Bridgman, John Taylor, A. Stewart. Head Office: Capt. C. E. Clarke, Vancouver, B.C. Formed to purchase certain leases of mining properties and water rights, on or near Germansen Creek, Omenica District, British Columbia, and to prospect, develop and turn to account the same.

Cambridge Gold Mining Co., Ltd.—Incorporated 1896. Authorized Capital, $1,000,000 in shares of $1.00. Directors: H. S. Wallace, R. J. Bealey, D. B. Boyle. Formed to acquire the "Cambridge" mineral claim, Trail District, British Columbia. Head Office: Rossland.

Cameronian Gold and Silver Mining Co., Ltd. — Capital, $850,000. Shares $1 each. Trustees: John R. Cameron, Angus Cameron, Martin L. Grimmett, William C. Davies. Head Office: Sandon, B.C. Formed to purchase the Cameronian and Radnorian mineral claims, situate on Lemon Creek, in the Slocan Mining Division of the District of West Kootenay, in the Province of British Columbia, etc., etc.

Cameron Lake Mining Company, Ltd. — Capital, $100,000. Shares 10 cents each. Trustees: A. Haslam, Wm. A. Young, L. Manson, T. D. Jones, W. R. Bryant. Head Office: Nanaimo, B.C. Formed to purchase the "Copper King" mineral claim, situate in Nanaimo Mining Division of the District of Nanaimo, Province of British Columbia.

Camp-Bird Gold Mining Co.—Registered 27th May, 1896. Head Office: Spokane. Authorized Capital, $1,000,000. Formed to carry on mining in British Columbia.

Camp Hewitt Mining and Development Co., Ltd. — Capital, $1,000,000. Shares $1.00 each. Trustees: Gerald A. Hankey, Wm. J. Armstrong, Jno. A. McKelvie. Head Office: Vernon, B.C. Formed to purchase the Lake-view, Mountain-view, Gladstone, Stag, Rhodesia, Dandy, Queen, Crown, Coldstream, Moss Rose and Winifred mining claims, situate at Camp Hewitt, in the Vernon Mining Division of Osoyoos Division of Yale District, British Columbia.

Canadian-American Gold Mining and Development Co., Ltd.— Capital, $1,500,000. Shares $1.00 each. Trustees: J. M. Robinson, Jos. P. Paxton, W. J. Robinson. Head Office: Rossland, B.C.

Canadian Beaver Mining and Development Co., Ltd., of Ontario—Capital, $1,500,000. Shares $1 each. Directors: J. K. Leslie, J. E. Knox, Thos. Bryce, S. A. Price, John Jones, P. H. Drayton, R. H. Gamey. Head Office: Toronto, Ont. Formed to carry on mining business in Ontario.

Canadian Citizen's Gold Mining Co., Ltd.—Capital, $500,000. Shares $1 each. Trustees: A. D. Hossack, E. J. Clark, A. E. E. Clark. Head Office: Vancouver, B.C. Formed to acquire the mineral claim situate within the Kettle River Mining Division of Yale, B.C., and known as the Exchange Mineral Claim.

Canadian Gold Mining Co., Ltd.—Incorporated 1896. Authorized Capital, $1,000,000, in $1 shares. Directors: John A. Smith, Robert Scott, and Edward Hewett, all of Rossland, B.C. Head Office: Rossland, B.C.

Canadian Mining and Smelting Co., Ltd.—Incorporated 1896. Authorized Capital, $200,000. Directors: Hugh J. Macdonald, J. H. Brock, W. J. Christie, Thos. Kelly, F. H. Phippen, D. E. Spragne, and J. H. Brown, all of Winnipeg; and G. A. Cox and George Broughall, of Toronto. Formed to carry on mining in British Columbia and elsewhere in the Dominion of Canada.

Canadian Mining, Milling and Smelting Co., Ltd.—Capital, $2,000,000. Shares $1 each. Trustees: C. K. Hammond, G. F. Hopkins, Wm. I. Elliott, A. W. Stubbs, A. D. Williams. Head Office: Sandon, B.C. Formed to acquire the mineral claims known as the "Homestretch," "Glacier 4," and the "Clara G." situate at the head of Kokanee and Kaslo Creeks, and adjoining the Molly Gibson Group, British Columbia.

Canadian Pacific Gold Mining Co., Ltd.—Capital, $750,000. Shares $1 each. Trustees: Allan McQuarrie, H. J. Moorehouse, Hugh Miller, A. G. Duncan, Moses McFadden. Head Office: Rossland B. C.

Canyon Creek Mining and Development Co., Ltd.—Capital, $1,000,000. Shares $1 each. Trustees: Isaac S. Freeze, Donald McLean, Geo. S. McCarter. Head Office: Rossland, B.C.

Carlton-Hood Mining Co., Ltd.—Capital, $1,000,000. Shares, $1.00 each. Trustees: J. A. Payzant, Thos. Donald, John Sinclair, R. A. Mackay, Thos. M. Daly. Head Office: Rossland, B.C. Formed to acquire the "Mt. Ranier," the "Mt. Hood" and the "Mt. Carlton" mineral claims, situate in the Trail Creek Division of the District of West Kootenay, in the Province of British Columbia.

Carndonagh Mines Company, Ltd.—Capital, $500,000. Shares, $1.00 each. Trustees: Edward E. Rand, R. E. Palmer, M. Costello. Head Office: Vancouver, B.C.

Carnes Creek Consolidated Gold Mines, Ltd.—Capital, $1,000,000. Shares, $1.00 each. Trustees: J. T. Brewster, W. Cowan, F. McCarty. Head Office: Revelstoke, B.C. Formed to purchase the "Roseberry," "Salisbury," "Homestake," "Arsenic," and "Imperial" mineral claims, situate in the Revelstoke Mining Division of the District of West Kootenay, in the Province of British Columbia.

Cassiar, Cariboo and Kootenay Mining Company, Ltd.—Trustees: H. Collins, Jas. J. Johnston, B. B. Johnston, Jas. R. Hamilton, R. B. Ellis, Wm. L. Newsom. Head Office: Vancouver, B.C. Formed to acquire the mineral claims known as "Mountain Chief," "Victoria," "Commander," "Golden Leaf," "Dandy," "Nonpareil," all situated on Harrison Lake, in the District of New Westminster, Province of British Columbia.

Castle Mountain Mining and Development Co., Ltd.—Capital, $2,000,000. Shares, $1.00 each. Trustees: Robt. J. Bealey, Jno. L. G. Abbott, Alex. C. Galt. Head Office: Rossland, B.C. Formed to adopt and carry into effect, either with or without modification, an agreement dated the 28th day of November, 1896, made between Angus Cameron, D. A. Good and Samuel Swanson of the first part, and William Henry Cooper and Alexander Casimer Galt of the second part, relating to certain mineral claims, situate upon Castle Mountain, south-east of Christina Lake, known as the "I. X. L." "X. 10 U. 8," "Kaffir," and "Lake View."

Cayoose Creek Gold Hills Mining and Milling Co., Ltd.— Capital, $200,000. Shares 25c. each. Trustees: A. H. Thomas, J. Collcut, C. Cattell. Head Office: Vancouver, B. C.

Cayoosh Creek Mines, Ltd.— Capital, $500,000. Shares $1.00 each. Trustees: Jno. McLellan McKinnon, Jas. F. Garden, Jno. H. Senkler, Wm. R. Robertson, Jos. R. Seymour. Head Office: Vancouver, B. C. Formed to acquire five mineral claims, known as the "British Columbia Group," in the Lillooet Mining Division of the Province of British Columbia.

C. C. & Q. Gold Mining and Development Co., Ltd.—Capital, $1,000,000. Shares $1.00 each. Trustees: Andrew T. Monteith, M. Simpson, Jno. S. Clute, Jr. Head Office: Rossland, B. C. Formed to acquire and purchase the "C. B. and Q." mineral claim, situate in the Trail Creek Mining Division of West Kootenay District, Province of British Columbia.

Chicago Gold Mining Co., Ltd.—Incorporated 1896. Authorized Capital, $500,000. Head Office: Spokane.

Chico Gold Mining Co., Ltd—Capital, $1,000,000. Shares $1.00 each. Trustees: J. W. Cover, J. E. Mills, D. W. McLeod. Head Office: Rossland, B.C. Formed to carry on mining in British Columbia.

Christina Mining and Milling Co., Ltd. (Foreign.)—Capital, $1,000,000. Shares $1.00 each. Head Office: Tacoma, Wash.

Cliff Gold Mining Co., Ltd.—Capital, $500,000. Shares, $1.00. Trustees: C. S. Douglas, A. Gilfillan, J. B. Gilfillan. Head Office: Vancouver, B.C. Formed to acquire the mineral claims Cland, Cliff, Nettie, and Gracie, situated on the east shore of Harrison Lake, British Columbia.

Clarke-Seattle Gold Mining Co., Ltd.—Capital $600,000. Shares $1.00 each. Trustees: Robert Clarke, Ella Clarke, Charles Hay, Neil McCallum, Isaac A. Dinsmore. Head Office: Grand Forks, B.C. Formed to acquire, by purchase or otherwise, the following mineral claims: "Seattle," "Butte," and "Drumlommond," all of which are situate in the Seattle Camp, on the North Fork of Kettle River Mining Division of Yale District, British Columbia.

Clifford Gold Mining Co. (Foreign).—Capital, $1,000,000. Shares $1.00 each. Head Office: Spokane, Wash.

Climax Gold Mining Company of Ontario.—Capital, $1,000,000. Shares $1.00 each. Directors: Thos. Black, James A. Linton, Geo. W. Walker, Wm. Williams, Benjamin E. Chaffey. Head Office; Rat Portage, Ont. Formed to carry on mining in Ontario.

Colcleugh Gold Mining Co. of Rat Portage, Ltd.—Capital, $1,000,000. Shares $1 each. Directors: John M. Colcleugh, Geo. Drewry, James M. Savage, David L. Mather, John McRae, Jno. Arbuthnot. Head Office: Rat Portage, Ont. Formed to carry on mining in the Province of British Columbia.

Collona Gold Mining Co., Ltd.—Incorporated 1896. Capital, $1,000,000. Directors: G. E. Pfunder, A. Klockmann, and F. M. McLeod, Rossland, B.C.; L. Lineman, and Charles Schmidt, Butte, Montana. Chief place of business, Rossland, B.C.

Columbia and Quartz Creek Mining and Development Co., Ltd.—Capital, $500,000. Shares $1 each. Trustees: W. G. Wilson, Thos. Downie, Wm. B. Robertson. Head Office: Beavermouth, B.C.

The Columbia Cariboo Gold Mining Co., Ltd.— Capital, $1,000,000. Shares $1.00 each. Trustees: Alexander McLean, James Anderson, Edward C. Black, Thomas H. Fraser. Head Office: Trail, B C. Formed to purchase the "Molly" and "Little Joe No. 2" mineral claims, situate at Cariboo Creek, in the Nakusp Mining Division of West Kootenay District, Province of British Columbia.

Columbia, Ontario Gold Mining Co., Ltd.—Incorporated 1896. Authorized Capital, $750,000 in shares of $1.00. Directors: J. B. Miller, R. R. Garney, J. Y. Cole, J. White, all of Rossland, B.C. Head Office: Rossland, B.C.

Combination Mining and Milling Co., (Foreign).—Capital, $600,000. Shares $1 each. Head Office: Spokane, Mich.

Combined Gold Mines Company (Limited), of Ontario. — Capital, $1,000,000. Shares $1.00 each. Directors: Robt. Humphries, Edgar W. Smith, Marion P. Hatch, Geo. Tait, Frank S. Cobb, Henry G. Breed, E. R. Hardy. Head Office: Hamilton, Ont. Formed to carry on mining in Ontario.

Commonwealth Mining and Development Co., Ltd.—Capital, $1,000,000. Shares $1.00 each. Trustees: J. M. Robinson, Jas. Boothe, W. J. Robinson, W. V. Davis. Head Office: Rossland, B.C. Formed to purchase "The Ogontz," "The Glenside," "The Tom Thumb," "The Josie," "The Vera," "The Alberta," "The Brandon," "The Brooklin," and "The Brantford" mineral claims, all situate in the Lardeau District, Province of British Columbia.

Comstock Gold Mining and Development Co., Ltd.—Capital, $600,000. Shares $1.00 each. Directors: Daniel O'Connor, Frank Cochran, Oliver A. Howland, Frank G. Morley, Strachan Johnson. Head Office: Toronto, Ont. Formed to purchase mining location W. R. 40 registered in the Land Titles Office for the District of Nipissing as parcel No. 264, and to pay therefor by allotting to the vendors $400,000 of the stock of the company fully paid up and non-assessable.

Concord Mining Co., Ltd.—Capital, $1,000,000. Shares, $1.00 each. Trustees: Ernest E. Evans, Arthur J. Mould, Geo. Coleman. Head Office: Vancouver, B.C.

Consol Gold Mining Co.—Registered 27th May, 1896. Head Office: Spokane. Authorized Capital, $1,000,000. To carry on mining in British Columbia.

Consolidated Gold Fields Development Co. of Ontario. — Capital, $1,000,000. Shares $1.00 each. Directors: C. H. Marsh, F. G. Morley, D. A. McDonald, V. Bedford, A. H. Macdonald, T. Howarth. Head Office: Toronto, Ont. Formed to mine in Ontario.

Consolidated Gold Lake Mining Co., Ltd.—Authorized Capital, $400,000. Directors: J. B. Neily, W. A. Temple, James Reeves, H. C. Walker, John C. Schappett. Head Office: J. B. Neily, President, Halifax, N. S. Controls 305 gold mining areas at Gold Lake, Halifax County, Nova Scotia.

Consolidated Gold Mining Co.—Incorporated 1896. Authorized Capital, $1,000,000, in shares of $1.00. Directors: R. Hunter, J. H. Adams, Duncan Campbell, C. Grant, H. M. Lister, and C. M. Carpenter, all of Rossland, B. C. Formed to purchase the "B. C." mineral claim, situate in the Trail District, Province of British Columbia. Head Office: Rossland.

Consolidated Goodenough and Ruby Gold Mining Co., Ltd.—Capital, $1,500,000. Shares $1.00 each. Trustees: G. E. Corbould, C. G. Major, R. Jardine. Head Office: New Westminster, B. C. Formed to acquire the "Goodenough" and "Ruby" Fraction mineral claims, situate on Morning Mountain, and adjoining the "Athabasca" mineral claim, in the Nelson Mining Division of the District of West Kootenay, in the Province of British Columbia.

Consolidated Seven Mines Co., Ltd. — Capital, $1,000,000. Shares $1.00 each. Trustees: Richard F. Kelly, Wm. H. Jeffrey, James S. Riley, John Lane, Smith Curtis. Head Office: Rossland, B. C. Formed to acquire the seven following claims, situate in the Trail Creek Mining Division of West Kootenay District, in British Columbia: "Copper Bar," "Magna Charta," "Single Standard," "Numeration," "Grace Darling," "Magician," and "Open Sesame."

Copper Belle Mining Co., Ltd.—Incorporated 1896. Capital, $1,000,000. Directors: N. Olsen, Edward Baillie, C. F. Sears, F. D. Sears, of Rossland, B C.; James Haddock, J. H. Leech, John Russell, John Thompson, Winnipeg, Man. Formed to acquire the mining claims recorded as "The South Falls and Copper Belle mining claims" situated in Trail Creek Mining Division, West Kootenay District, and to mine and work any mineral lands elsewhere in the Province of British Columbia.

Copper Giant Gold Mining Co., Ltd.—Capital, $1,000,000. Shares $1.00 each. Trustees: Wm. G. Merryweather, A. E. Torelle, John R. Reavis, H. B. Smith. Head Office: Rossland, B.C.

Copper Mountain Mines, Ltd.—Capital, $500,000. Shares, $1.00 each. Trustees: John A. Fraser, Thos. H. Tracy, Geo. W. Weekes. Head Office: Vancouver, B.C. Formed to acquire four mineral claims situate on Jervis Inlet, near Vancouver Bay, in the District of New Westminster, in the Province of British Columbia, known as the "Columbia," the "Colorado," the "Portland," and the "Eldorado" mineral claims.

Copper Queen Gold Mining and Development Co., Ltd.—Incorporated 1896. Authorized Capital, $1,000,000, in shares of $1.00. President, John A. McGillivray, Q.C. Vice-President, Alfred Ansley. Secretary-Treasurer, H. C. MacLean, Toronto. Formed to acquire and work the "Copper Queen" and "Africa" mineral claims, in the Trail District, Province of British Columbia.

Coronado Gold Mining Co. of Rat Portage, Ltd.—Capital, $40,000. Shares, $100.00 each. Directors: George Drewry, George Girard, John W. Colcleugh, John M. Savage, Arthur C. Boyce. Head Office: Rat Portage, Ont. Formed to carry on mining in Ontario.

Cottonwood (B. C.) Alluvial Mining, Ltd.—Registered 1896. Authorized Capital, £65,000. Head Office: 55-6 Bishopsgate Street, London, England.

Crœsus Gold Mining and Development Co. of Rat Portage, Ltd.—Capital, $195,000.00. Shares, $10.00 each. Directors: Hugh J. Macdonald, Roderick R. McLennan, Jerry Robinson, William Williams, James A. Linton, Thos. S. Kennedy. Head Office: Rat Portage. Formed to mine in Ontario.

Cromwell Mining and Development Co., Ltd.—Capital, $1,200,000. Shares $1.00 each. Trustees: Albert S. Stein, W. H. Fife, H. E. Cover, J. A. Scaman, W. J. Green. Head Office: Rossland, B.C.

Cumberland Gold Mining Co., Ltd.—Capital $2,000,000. Shares $1.00 each. Trustees: Jas. T. McKenzie, Frank Young, Alex. B. Acom, John Edgrew, John H. McDonald, George Willard, J. D. Breeze, Archibald C. Sinclair. Head Office: Rossland, B.C.

Czar Gold Mining Co. of Ontario, Ltd.—Capital, $1,000,000. Shares, $1.00 each. Directors: John Russell, Josiah T. Robarts, Stephen S. Cummins, Wm. R. Mulock, Wm. S. Palk. Head Office: Rat Portage, Ont. Formed to carry on mining in Ontario.

Darlington Bay Gold Mining Co., Ltd.—Directors: H. H. Beck, N. C. Westerfield, Robt. H. Agur, Hugh John Macdonald. Head Office: Rat Portage, Ont.

Deep Cave Gold Co., Ltd.—Capital $250,000. Shares 25 cents each. Trustees: Jno. T. Carroll, M.D.; Michael Costello, Walter, Taylor. Head Office: Vancouver, B.C. Formed to acquire by purchase, location or otherwise, a tract or tracts of mineral lands on Silver Creek, Harrison Lake, Yale District, or elsewhere, in the Province of British Columbia, and to work and develope the same.

Delaware Mining and Milling Co.—Incorporated 1896. Authorized Capital, $1,000,000. Head Office: Spokane, Wash.

Detroit Consolidated Gold Mining Co., Ltd—Capital, $1,000,000. Shares $1.00 each. Trustees: Geo. E. Pfunder, L. Pfunder, H. Kingsmill, Hon. T. Mayne Daly. Head Office: Rossland, B.C. Formed to purchase the "Detroit Fraction" mineral claim and the "Iron Queen, No. 1," mineral claim, situate in the Trail Creek Division of the West Kootenay, in the Province of British Columbia.

Diadem Gold Mining and Development Co. (Foreign).—Capital, $1,000,000. Shares $1.00 each. Head Office: Spokane, Wash.

Dollarocracy Mining and Smelting Co., Ltd.—Capital, $1,000,000. Shares $1.00 each. Directors: F. P. Gatelius, J. W. Kimball, Lee Davenport. Head Office: Trail Landing, B.C. Formed to acquire by purchase or otherwise, of the mineral claims known as the "Pete" and "Lulu" situate on the Pend

D'Oreille River on the north bank thereof, three miles from its junction with the Columbia River, in the Trail Creek Mining Division of West Kootenay, British Columbia.

Dominion Gold Dredging and Placer Mining Co., Ltd. — Directors: John Chambers, W. E. Raney, James Amess and Alex. Leslie. Head Office: W. E. Raney, Secy.-Treas., 26 King street East, Toronto. Formed to carry on dredging for gold in the Fraser River, British Columbia.

Dundee Gold Mining Co., Ltd.—Capital, $1,000,000. Shares $1.00 each. Trustees: Chas. Dundee, John L. Parker, W. A. Galliher, Robert Scott, Ernest Kennedy, Chas. F. P. Conybeare, William D. Barclay. Head Office: Rossland, B.C. Formed to acquire that certain group of mineral claims to be known as the "Parker group," consisting of the "Parker," "Bill," and "Lightheart," situated about one and one-half miles north-east from Quartz Creek, in the Nelson Mining Division of the West Kootenay District of British Columbia, about one and one-half miles from the Nelson and Fort Sheppard Railway line, and to prospect, work, explore, develop, lease, sell or otherwise turn to account the said mineral claims, or any of them.

Dundurn Gold Mining Co., Ltd.— Capital, $1,000,000. Shares $1.00 each. Trustees: Alex. A. Mackenzie, Daniel Tuomey, W. L. Mackenzie. Head Office: Rossland, B C. Formed to purchase the "Dundurn" "Kahanee" and "Benbow" mineral claims, situated in the Trail Creek Mining Division of the District of West Kootenay, in the Province of British Columbia.

Early Bird Gold Mining Co., Ltd.— Capital, $1,000,000. Shares $1.00 each. Trustees: J. A. Pounder, J. B. Combs, J. A. Seamen. Head Office: Rossland, B.C.

Eastern Star Gold Mining Co.—Incorporated 1896. Capital, $500,000, divided into 500,000 shares of a value of $1.00 each. Head Office: Spokane, Wash. To mine in British Columbia.

East St. Louis Gold Mining Co., Ltd. — Capital, $1,000,000.00. Shares $1.00 each. Trustees: Alex. Wilson, Jos. J. Henager, John Jackson, jr., M. Sullivan, Benjamin F. O'Neill. Head Office: Rossland, B.C.

Edgar Gold Mining and Smelting Co., Ltd. — Capital, $1,500,000. Shares, $1.00 each. Trustees: F. Brown, W. T. Hall, G. H. Green, E. A. Green, L. Harris. Head Office: Rossland, B.C.

Eno Gold Mining Co. of London. Ont., Ltd.—Capital, $1,000,000. Shares $1.00 each. Directors: Thomas B. Escott, Horace McDougall, Alfred Robinson, Clinton E. Turner, Alfred W. Wright, Geo. Burness. Head Office: London, Ont.

Eldon Gold and Silver Mining Co. (Foreign).—Capital, $1,000,000. Shares, $1.00 each. Head Office: Spokane, Wash., U.S.A.

Eldorado Placer Gold Mining Co., Ltd.—Capital, $200,000. Shares, $1.00 each. Trustees: B. Douglas, R. A. Lambert, Frank S. Taggart. Head office: Vancouver, B.C. Formed to purchase the "Double L" placer claim, situate on Cayoosh Creek, about eight miles from the Town of Lillooet, in the Mining Division of Lillooet, Province of British Columbia.

Empire Mining and Milling Co., Ltd.—Capital, $1,000,000. Shares, $1.00 each. Trustees: Thos. Anderson, Thos. P. Long, C. J. Campbell. Head Office: Rossland, B.C. Formed to purchase the "Empire" Mineral Claim, situated near Grand Forks, in the Province of British Columbia.

Empress Gold Mining Co., Ltd.— Capital, $1,000,000. Shares $1.00. each. Trustees: Edgar Dewdney, A. J. McLellan, J. T. Bethune, L. Goodacre, A. K. Munroe, J. W. Coburn, Jas. A. Fraser. Head Office: Victoria, B.C. Formed to purchase or otherwise acquire the "Empress" mineral claim, situate in the Trail Creek Mining Division, in the District of West Kootenay, Province of British Columbia.

Empress of India Mining Co., Ltd.— Capital, $1,000,000. Shares $1.00 each. Trustees: E. E. Rand, D. S. Curtis, Geo. Adams. Head Office: New Westminster, B.C. Formed to acquire the "Empress" mineral claim, situate on Porcupine Creek, Nelson Mining Division of West Kootenay District, British Columbia.

English and French Gold Mining Co.— Incorporated 1896. Authorized Capital, $2,000,000. Directors: A. Omon, J. Gelinas, A. Dorais, Wm. Dorais, Wm. O'Neill, F. A. Proebstal, Chas. Hay, N. McCallum. Head Office: Grand Forks, B.C. Formed to acquire by purchase or otherwise the following mineral claims: "Napoleon Bonaparte," "Cleopatra," "Mark Anthony," "May Flower," "Grand Forks Belle," "Bonanza" and "Bess," all of which are situated in Brown's Camp, on the North Fork of Kettle River, in the Kettle River Mining Division of Yale District in the Province of British Columbia.

English-Canadian Gold Mining Co. (Foreign).— Capital $1,000,000. Shares $1.00 each. Head Office: Spokane, Wash., U. S. A. Objects: To purchase and operate mines, smelters, etc., in the United States or British Columbia.

Enterprise Gold Mining Co. (Foreign).—Capital, $1,000,000. Shares $1.00 each. Head Office: Spokane, Wash.

Equitable Gold Mining and Development Co., Ltd.—Capital, $1,000,000. Shares $1.00 each. Trustees: J. C. Caie, L. H. Schmidt, Jas. Cowan, R. Reddick, H. R. Dunlop. Head Office: Rossland, B.C.

Esther and Queen Anne Consolidated Gold Mining Co. (Foreign).— Capital $1,000,000. Shares $1.00 each. Head Office: Spokane, Wash.

Ethel Group Gold Mining Company of Rossland, Ltd.—Capital, $1,500,000. Shares $1.00 each. Trustees: Jos. Fyfe, Edward L. Clark, William Cumming, Jno. W. Moore. Head Office: Rossland, B. C. Formed to purchase the Ethel No. 1, Elk No. 1, Tenderfoot, Ada L, Iron King No. 4 and Blue Bell No. 1 mineral claims, all situate in the Trail Creek Mining Division of West Kootenay District, on the divide between Murphy Creek and the East Fork of Sheep Creek, in the Province of British Columbia.

Eureka Consolidated Mining Co., Ltd.— Incorporated 1896. Authorized Capital, $500,000 in shares of $1.00. Officers: S. Rosenhaup, President, Geo. W. Dickinson, C. D. Garrison, Ross Thompson, John M. Burke. Head Office: H. F. Wilson, Sec.-Treas., Spokane, Wash. Mines Office: John M. Burke, Manager, Rossland. Owns and operates the "Eureka," "Evening" and "War Eagle" No. 2 claims in the Trail District, Province of British Columbia.

Evangeline Gold Mining Co.— Incorporated 1896. Authorized Capital, $125,000. Directors: M. Willis, Quincy, Mass.; J. G. Martin, Boston; Geo. Brackett, Boston; G. M. Hamilton, Sherbrooke, N.S. Owns and operates 21 gold areas in the Goldenville District, Nova Scotia. Head Office: Geo. Brackett, Sec.-Treas., 229 Congress St., Boston, Mass.

Excelsior Gold Mining Co., Ltd.— Capital, $500,000. Shares $1.00 each. Trustees: Jno. J. Banfield, Jos. R. Seymour, Jno. S. Rankin. Head Office: Vancouver, B.C. Formed to acquire, by purchase or otherwise, the mineral claim "Excelsior," situate in the Lillooet District, in the Province of British Columbia, from the owners thereof, either for money or for fully paid-up shares of the Company, or partly for money and partly for fully paid-up shares of the Company.

Fairmont Gold Mining Co., Ltd.— Capital, $1,000,000. Shares $1.00 each. Trustees: S. L. Long, J. F. Ritchie, P. G. Nash. Head Office: Rossland, B.C.

Fairview Gold Mining and Developing Co., Ltd.—Capital, $1,000,000. Shares $1.00 each. Directors: John T. Gilmore, Herbert H. Dewart, Geo. H. Maurer, James S. Harding, Frank Griffin. Head Office: Rothesay, N.B.

Fairview Gold Mining Co.—Head Office: Seattle, Wash. Capital, $1,000,000. To mine in British Columbia.

Falstaff Gold Mining Co., Ltd.— Capital, $1,500,000. Shares $1.00 each. Trustees: E. J. McCune, James Hunter, A. E. Lyford. Head Office: Rossland, B. C. Formed to purchase the mineral claims "Bonnie Doon," "Dan Webster," "Falstaff," "Ben Hur, No. 2," "Bonner," and "White Elephant, No. 3," situate in the Trail Creek Mining Division of West Kootenay District, British Columbia.

Favorite Gold Mining and Development Co., Ltd.—Capital, $5,000,000. Shares $1.00 each. Trustees: Rich'd Hall, Alfred T. Watt, Jas. H. Falconer, Chas. E. Jones, Geo. L. Milne. Head Office: Victoria, B. C. Formed to purchase the "Southern Belle," "Queen of the Hills," "Viola," "Bay State," "Bowis," "Ace High," "Royal," "Imogene," "Henrietta," "Seattle," "Butte," "R. Bello," "Emma," and "Chickerman" mineral claims, all situated in the famous Greenwood, Clarke and Summit Camps, Osoyoos Division of Yale District, North Forks of Kettle River, British Columbia.

Fern Gold Mining and Milling Co., Ltd.— Capital, $200,000. Shares 25c. each. Trustees: F. C. Innes, R. G. Tatlow, S. O. Richards. Head Office: C. C. Bennett, Secretary, Vancouver, B. C. Formed to acquire mining leases or mineral claims, or any other mining property in any part of the Province of British Columbia, and in particular to acquire from the "Montreal and British Columbia Prospecting and Promoting Company, Limited Liability," three (3) certain mineral claims, situated in the Nelson Mining Division of the Kootenay District, known as the "Fern" mineral claim, "Eureka" mineral claim, and "Hidden Treasure" mineral claim, as recorded in the Mining Recorder's office at Nelson.

Finance Gold Mining Company, Ltd.— Capital, $1,000,000. Shares $1.00 each. Trustees: Joseph Powell, M. H. Dobie, Angus McNish. Head Office: Rossland, B. C. Formed to purchase the "Finance," "Big Whale" and "Echo" mineral claims, situate on the south side of Green Mountain, between Rock Creek and Murphy Creek, in the Trail Creek Mining Division of West Kootenay, British Columbia.

Fire Lake Gold Mines, Ltd.—Capital, $1,000,000. Shares $1.00 each. Trustees: J. McLellan MacKinnon, Robt. J. Leckie, J. G. Hutchinson, J. W. Girvin, Joseph R. Seymour. Head Office: Vancouver, B. C. Formed to acquire mines, mineral claims, mining leases, coal lands, or any other mining property in the Dominion of Canada or elsewhere, and in particular the "Hard Scrabble," "Sun Dog," "Wild Horse," "Morning," "Noon Day," "Snowshoe," "Crown Point," and "March" mineral claims, situate on Fire Mountain, in the New Westminster Mining Division of British Columbia.

Fire Mountain Gold Mining Co., Ltd.—Capital, $1,000,000. Shares $1.00 each. Trustees: John R. Brown, Robert J. Leckie, James W. Girvin, Arthur G. Addison, W. H. Leckie. Head Office: Vancouver, B. C. Formed to acquire the mineral claims known as the "Free Gold" mineral claim, the "Money Spinner" mineral claim, and the "Neptune" mineral claim, situate on Fire Mountain, near Port Douglas, New Westminster District, British Columbia.

Forest Belle Mining and Development Co., Ltd.— Capital, $1,250,000. Shares $1.00 each. Trustees: Isaac Anderson, Geo. F. Whiteman, Jno. S. Paterson, Wm R. Ralston. Head Office: Rossland, B. C.

Forest City Gold Mining and Prospecting Co. of London, Ltd—Capital, $2,000,000. Shares $1.00 each. Directors: R. S. Wood, J. D. Wilson, Thos. Beattie, M. C. Cameron, William Blair. Head Office: London, Ont.

Forest Rose and St. George Hydraulic Gold Mining Co.— A Private Company, organized in 1876, and composed of the following shareholders: James Innes, W. P. Smith, William Manson. Head Office: James Innes, Barkerville, B.C. The company holds 172 acres of land in fee simple, and has for a number of years

successfully worked alluvial ground at Williams Creek, in the Cariboo District, British Columbia. $25,000 expended to date in opening up the claims. The previous owners won gold to the value of $750,000; since 1876, when this present company started, gold to the value of $50,000 has been taken out. Dividends have been paid regularly since 1884.

Fourteen Gold Mines Consolidated Co., Ltd.—Capital, $5,000,000. Shares $1.00 each. Trustees: E. D. Carpenter, Harry White, Louis Jaffe. Head Office: Rossland, B. C.

Freeburn Gold Mining Co., Ltd.—Incorporated 1896. Authorized Capital, $500,000. Directors: John Irving, William Wilson and L. Goodacre. Head Office: Victoria, B. C. Formed to acquire mining claims within the Trail Creek Mining Division, B. C., and particularly that known as the "Freeburn," and to pay for the same either with money or fully paid up shares in the company.

Free Gold Mining and Development Co. of Toronto, Ltd.—Capital, $2,000,000. Shares, $1.00 each. Directors: John Sykes, S. F. McKinnon, Wm. T. Stuart, Norman Allan, Robt. A. Wood, Jas. Baird, W. H. Wallbridge. Head Office: Toronto, Ont.

Germania Gold Mining Co., Ltd.—Capital, $1,000,000. Shares, $1.00 each. Trustees: John R. Eden, Robert Scott, John A. Smith. Head Office: Rossland, B.C.

German Mining and Milling Co. (Foreign).—Capital, $50,000. Shares, $1.00 each. Head Office: Tacoma, Wash.

Giant Mining Co. (Foreign).—Capital, $2,500,000. Shares, $1.00 each. Head Office: Spokane, Wash.

Glasgow Gold Mining Co., Ltd.—Capital, $1,000,000. Shares, $1.00 each. Trustees: J. F. Ritchie, H. Marymont, P. G. Nash. Head Office: Rossland, B.C.

Golconda Mining and Milling Co., Ltd.—Capital, $50,000. Shares, $1.00 each. Trustees: W. J. McGuigan, G. H. Geary, T. F. McGuigan. Head Office: Vancouver, B.C.

Gold Bar Mining and Development Co., Ltd.—Capital, $1,200,000. Shares, $1.00 each. Trustees: Jno. T. Sheridan, E. J. Lennox, Jos. Wright, Wm. Snider, Alex. McBride, T. A. Helm, Geo. E. Toms, John S. Patterson, Joshua E. Mills. Head Office: Rossland, B.C. Formed to acquire and operate the "Gold Bar" Mineral Claim, situate in Trail Creek Mining Division, in West Kootenay District, British Columbia.

Gold Cliff Mining and Development Co., Ltd.—Capital, $1,000,000. Shares, $1.00 each. Directors: James B. Klock, Horace Thorne, J. Herbert Starr, John Galt, James J. Warren. Head Office: Toronto, Ont.

Gold Coin Mining Co., Ltd.—Capital, $1,000,000. Shares, $1.00 each. Trustees: William A. Campbell, John J. Moynahan, Jno. F. McCrae, Thomas Anderson, Thomas P. Long. Head Office: Rossland, B.C. Formed to purchase the "Coin" Mineral Claim situate near Grand Forks, in the Province of British Columbia.

Golden Bell Mining Co., Ltd.—Capital, $1,000,000. Shares, $1.00 each. Trustees: Percy Smith, George M. Noxon, Harold Harold, W. D. McFadden, Chas. S. Carpenter. Head Office: Rossland, B.C.

Golden Cache Extension Gold Mining Co., Ltd.—Capital, $600,000. Shares, $1.00 each. Trustees: Griffith Griffith, J. Duff Stewart, George L. Allan, Ross J. Ralph, A. Allayne Jones. Head Office: Vancouver, B.C. Formed to acquire the mineral claims known as the "Blue Pete" and "Eagle's Nest," situate on the north side of Golden Eagle Mountain, above Seaton Lake in the Lillooet Mining Division of the Province of British Columbia.

Golden Canyon Gold and Silver Mining Co., Ltd.—Capital, $800,000. Shares, 50 cents each. Trustees: William J. McMillan, Robert J. Hamilton, Geo. E. Bower. Head Office: Vancouver, B.C.

Golden Chain Prospecting and Development Co., Ltd.—Capital, $2,000,000. Shares $1.00 each. Trustees: Wm. A. Macdonald, Hugh R. Cameron, Wm. T. Tanner, A. Mainwairing-Johnson, Archd. H. Macdonald. Head Office: Nelson, B.C. Formed to acquire the mineral claims known as "Upward" and "Woodward" near the mouth of Petite or Spence Creek, Lower Nicola, and the locations known as "Dowrie," Guelph," "Silver Queen," "Stambo Ledge," Lalla Rookh," "Princess," "Queen of the West," and "Western King," on Bullion Creek, in the Harrison Lake District, all in British Columbia.

Golden Drip Mining and Milling Co., Ltd.—Capital, $500,000. Shares $1.00 each. Trustees: Wm. G. Merryweather, W. J. Weiteside, Robt. J. Bealey, John R. Reavis, Joseph F. Ritchie, Jos. Dormitzer. Head Office, Rossland, B.C.

Golden Eagle Mountain Gold Mining Co., Ltd.—Capital, $600,000. Shares $1.00 each. Trustees: Griffith Griffith, J. Duff Stuart, George L. Allan, Ross J. Ralph, A. A. Jones. Head Office, Vancouver, B.C. Formed to acquire the "Blue Pete" and "Eagle's Nest," situate on the north side of Golden Eagle Mountain, above Seaton Lake, in the Lillooet Mining Division of the Province of British Columbia.

Golden Ears Gold, Silver and Copper Mining Co., Ltd.—Capital, $40,000 Shares $1.00 each. Trustees: Jos. C. Armstrong, Richd. Lonsdale, Robt. Buckland. Head Office: New Westminster, B.C.

Golden Era Prospecting and Development Co., Ltd.—Capital, $2,000,000. Shares $1.00 each. Trustees: Thos. M. Daly, Alex. C. Galt, Jas. A. Macdonald. Head Office: Rossland, B.C. Formed to adopt and carry into effect, with or without modification, an agreement dated the 1st day of December, 1896, made between B. F. Vancleve, J. L. Pritchard, R. J. Cameron, R. J. Hamer, and E. L. Steves, of the first part, and William Henry Cooper and Alexander Casimar Galt, of the second part, for the sale of the "Senator," "Acme," "Prince Hal," "Giant," and "Caledon," mineral claims, situate near Christina Lake, in the Trail Creek Mining Division of the District of West Kootenay, British Columbia.

Golden Fissure Mining Co. of Ontario, Ltd.—Capital, $1,000,000. Shares $1.00 each. Directors: Valentine Bedford, William E. Burritt, Donald A. Macdonald, William C. Kennedy, Frank S. Wells. Head Office: Toronto, Ont.

Golden Fleece Mining Co., Ltd.—Capital, $1,000,000. Shares $1.00 each. Trustees: C. C. Woodhouse, Jr., H. E. D. Merry, R. T. Penrose. Head Office: Rossland, B. C.

Golden Gate Mining Co., Ltd.—Capital, $300,000. Shares $1.00 each. Directors: Francis Fitzgerald, Arch'd H. Macdonald, Jas. D. Warner, Alex. M. Hay, Robert H. Ahn. Head Office: Toronto, Ont.

Golden Goblin Mining Co. of Ontario, Ltd.—Capital, $500,000. Shares $1.00 each. Directors: Frederick R. James, Alan C. Thompson, G. L. Lennox. Head Office: Toronto, Ont.

Golden Queen Mining and Development Co. of Algoma, Ltd.—Capital, $750,000. Shares $1.00 each. Directors: Jno. A. Barren, Thos. B. Clark, Henry G. Buckland, Jos. P. Thompson, Nelson Simpson. Head Office: Toronto, Ont.

Golden Treasure Mining and Developing Co., Ltd.—Capital, $250,000. Shares 25c. each. Trustees: S. O. Richards, A. A. Jones, Chas. C. Bennett, Jas. H. Brownlee, Jno. J. Banfield. Head Office: Vancouver, B. C.

Golden Wedge Mining Company, Ltd.—Capital, $1,500,000. Shares $1.00 each. Trustees: William J. Nelson, John S. Clute, Jr., Edward Bowes,

Charles S. Warren-Howland, V. N. Stevenson. Head Office: Rossland, B. C. Formed to purchase the "Ida Fraction," and the "Spotted Tail" mineral claims, situate on Crown Point Mountain, in the Trail Creek Mining Division, in the District of West Kootenay, in the Province of British Columbia, more particularly described in three separate Crown Patents of the said mineral claims, as lot 989, lot 990, and lot 988, respectively, in group one in the said district.

Golden West Development and Exploration Syndicate, Ltd.— Capital, $500,000. Shares $1.00 each. Trustees: Jas. J. Mulhall, Jas. S. Fagan, Jno. V. Armstrong. Head Office: Vancouver, B. C.

Golden West Mining and Development Co., Ltd.— Capital, $200,000. Shares 25c. each. Trustees: S. Sherdahl, Jas. B. Smith, Peter R. Ritchie, G. Thomas, W. R. Bryant. Head Office: Vancouver, B. C.

Gold Fields Mining and Development Co. of Ontario, Ltd.— Capital, $2,500,000. Directors: Edward Morgan, Miles Vokes, Jas. S. Fullerton, William B. Newsome, Edwin Wallace, Wm. J. Wallace, Edward R. Cameron, Alfred Robinson. Head Office: Toronto, Ont.

Gold Hill Quartz Mining Co. of Fairview, Ltd.— Capital, $750,000, divided into 750,000 shares of a value of $1.00 each. Directors: A. A. Davidson, Wm. A. Dier, Arthur Neaves, Victoria, B. C. Chief place of business: Victoria, B. C. Formed to acquire the mineral claim known as the "Gold Hill," in Fairview Camp, in the Osoyoos Division of Yale District, and to mine and deal in mineral lands elsewhere in the Province of British Columbia.

Gold Hills Exploration and Development Co. of Toronto, Ltd.—Capital, $2,000,000. Shares $1.00 each. Directors: James D. Edgar, John Foy, Oronhyatekha, Wm. J. Douglas, Geo. McMurrich, Frederick W. Strange, John R. Minnhinnick, John G. Bowers, Jos. B. McArthur. Head Office: Toronto, Ont.

Goldie-Rene Mining Company, Ltd.— Capital, $1,000,000. Shares $1.00 each. Trustees: John Y. Cole, Henry A. Phillips, James Watts, Edgar Charles, Walter F. Russell. Head Office: Rossland, B. C. Formed to acquire or purchase the "Goldie" and "Rene" mineral claims, situate on Sullivan Creek, about one mile from the Columbia River, in the Trail Creek Mining Division, in the District of West Kootenay, in the Province of British Columbia.

Gold King Mining and Milling Co., Ltd. — Capital,. $500,000. Head Office : Fairville, parish of Lancaster, N.B. Directors : E. G. Evans, Hampton, N.B., E. C. Elkin, St. John ; C. P. Baily, St. John ; Mark Gallerd, Waterville, Maine ; C. J. Wasson, St. John.

Gold King Mining Co.—Authorized Capital, $1,000,000. Directors : T. S. Gilmour, Rossland ; C. R. Hamilton, Rossland, and A. D. Provand, London, England. Head Office : Rossland, B.C. Formed to acquire and work the Gold King mineral claim in the Trail Mining Division, B.C.

Gold Mining and Development Corporation of Ontario, Ltd.—Capital, $2,500,000. Shares $1.00 each. Directors : Albert E. Jones, John A. Dignum, Henry Jones, Francis Phillips, Fred D. Vignie. Head Office : Toronto, Ont.

Gold Mountain Mining and Milling Co., Ltd.—Capital, $1,000,000. Shares $1.00 each. Trustees : Jonathan Miller, F. S. Timberlake, B. Springer, Lewis B. Hesse, H. Heffering. Head Office : Vancouver, B.C. Formed to adopt and carry into effect, with or without modifications, an agreement dated the 12th day of November, A.D. 1896, and made between S. I. Timberlake and the said F. S. Timberlake and Lewis Blair Hesse, of the one part, and D. Todd Lees, on behalf of the Company, of the other part.

Gold Quartz Free Milling, Mining and Development Co. of Ontario, Ltd.—Capital, $2,000,000. Shares $1.00 each. Directors: J. M. Staebler, Jas. McMullen, Wm. A. Young, J. H. Wethey, W. C. Trotter, Wm. Maguire, David Morris, J. S. Campbell. Head Office: Toronto, Ont.

Gold Queen Mining and Reduction Co.—Capital, $1,000,000. Shares $1.00 each. Head Office: Spokane, Wash.

Golden Queen Mining Co.—Incorporated 1896. Authorized Capital, $1,000,000. Directors: Fred J. Kilner, John Y. Cole, Chas. F. Oudin, W. J. Thayer, R. P. Daniels. Formed to acquire and work the "Edna," "Golden Queen," and "Carrie" fraction, containing in all about 40 acres in the Trail Mining District, Province of British Columbia. Head Office: Spokane, Wash. Mines Office: Rossland, B.C.

Golden Star Mining and Exploration Co. of Ontario Ltd.—Capital, $1,000,000. Shares $1.00 each. Directors: Thos. A. Merritt, Albert C. Hubbell, John C. McDougall, Robt. E. McManus, V. P. Chappell, Geo. V. Burgess, Jas. E. Smith. Edward Ward. Head Office: Port Arthur, Ont.

Gold Stream Mining Co.—Registered 30th May, 1896. Head Office: Cudahy, State of Wisconsin, U.S.A. Authorized capital, $1,000,000. To carry on mining in British Columbia.

Good Friday Gold Mining Co., Ltd.—Capital, $1,000,000. Shares $1.00 each. Trustees: F. W. Pretty, T. S. Haston, G. Green, J. C. Campbell, W. Brown. Head Office: Rossland, B.C. Formed to purchase the "Lucky Boy" and "Good Friday" mineral claims, situate in the Nelson Division of West Kootenay, in the Province of British Columbia.

Gopher Gold Mining Co., Ltd.—Capital, $1,000,000. Shares $1.00 each. Trustees: D. M. Linnard, A. H. MacNeill, A. F. Corbin. Head Office: Rossland, B.C. Formed to purchase the "Gopher" mining claims, Trail District, Province of British Columbia.

Grace Darling Gold Mining Co., Ltd.—Capital, $150,000. Shares 10 cents each. Trustees: C. O. Lalonde, W. A. Blair, J. S. Clute, jr., T. Parker, S. Forteath. Head Office: Rossland, B.C. Formed to purchase the "Grace Darling Fraction," "Lancashire Lass," and "Bendigo" mineral claims, situate on Sullivan Creek, in the Trail Creek Mining Division of West Kootenay, Province of British Columbia.

Grand Forks Gold Mining Co., Ltd.—Capital, $1,500,000. Shares $1.00 each. Trustees: Horatio A. Henderson, John A. Elliott, La Rue Perrine, Joseph K. Johnston, W. K. White. Head Office: Grand Forks, B.C. Formed to acquire the following mineral claims: "Little Volcanic," "Mascot," and "Indian Queen," all of which are situate in Brown's Camp, on the North Fork of Kettle River, in the Kettle River Mining Division of Yale District, British Columbia.

Grand Prize Mining and Milling Co.—Capital, $1,000,000, divided into 1,000,000 shares of a value of $1.00 each. Chief place of business: Spokane, Wash.

Grand Union Mining and Development Co., Ltd.—Capital, $1,000,000. Shares $1.00 each. Trustees: A. W. Smith, M. H. Dobie, A. MacNish. Head Office: Rossland, B.C. Formed to purchase the "Grand Union and Queen" mineral claims, situate in the Trail Creek Division of the District of West Kootenay, in the Province of British Columbia.

Granite Mining and Milling Co. (Foreign).—Capital, $700,000. Shares $1.00 each. Head Office: Spokane, Wash.

Granite Mining and Smelting Co. (Foreign).—Capital, $500,000. Shares $1.00 each. Head Office: Spokane, Wash. Formed to work, operate and develop the "Granite Iron" mineral claim, situate near the Town of Sanca, B.C.

Granville Mining Co., Ltd.—Capital, $1,000,000. Shares, $1.00 each. Trustees: Percy W. Evans, Geo. Coleman, David G. Marshall. Head Office: Vancouver, B.C.

Great Hopes Mining Co., Ltd. (Foreign).—Capital, $500,000. Shares, $1.00 each. Head Office: Spokane, Wash.

Great Ida Gold Mining Co., Ltd.—Capital, $750,000. Shares, $1.00 each. Trustees: Harry Daniels, E. A. Chambers, H. V. Halliwell. Head Office: Rossland, B.C. Formed to acquire the "Great Ida" Mineral Claim, situate on Sophia Mountain, three miles south-west of the City of Rossland, B.C.

Great Northern Gold Mining and Development Co. of Rat Portage, Ltd.—Capital, $90,000. Shares, $50.00 each. Directors: Hon. Hugh J. Macdonald, Major Roderick R. McLennan, M.P., Henry M. Drummond, Major F. J. Bowles, Louis Hilliard, Clifton McMicken. Head Office: Rat Portage, Ont.

Great Northern Mining Exploration and Development Corporation, Ltd.—Capital, $475,000. Shares, $1.00 each. Directors: Sir Mellville Parker, Fred'k Rogers, H. A. Drummond, Geo. J. Ashworth, Thomas H. Murray. Head Office: H. A. Drummond, Toronto, Ont.

Great Western Mines, Ltd.—Capital, $1,000,000. Shares, $1.00 each. Directors: W. B. Pool, A. E. Kincaide, T. Kilpatrick, J. J. Young. Head Office: Revelstoke, B.C. Formed to acquire by purchase the group of mineral claims known as the Great Western group, consisting of the "Young Canuck," "Great Western," and "Cracker Jack" Claims, situated on the shores of Upper Arrow Lake, about six miles north-east of Arrowhead, and being in the Lardeau Mining Division of British Columbia.

Great West Gold and Silver Mining Co., Ltd.—Capital, $1,000,000. Shares, $1.00 each. Trustees: J. R. Cameron, Albert Love, M. L. Grimmett. Head Office: Sandon, B.C. Formed to purchase the "Sligo," "Summit" and "Allie" mineral claims, situate in the Slocan Mining Division of the District of West Kootenay, in the Province of British Columbia.

Great West Gold Fields Development Co. of Vancouver, Ltd.—Capital, $100,000. Shares, $20 00 each. Trustees: Joseph K. Henry, George E. Farren, Wesley Richardson, S. G. Faulkner. Head Office: Vancouver, B.C.

Gresham Gold Exploring Syndicate, Ltd. (Foreign).—Capital, £50,000. Shares, £1 each. Head Office: 13, 14 Abchurch Lane, London, Eng.

Grimsby Gold Mining Co., Ltd.—Capital, $200,000. Shares, $1.00 each. Directors: Francis S. Baker, Murray Fitch, John Kennan, Herbert C. Kennan, Charles W. Van Duzer, and Jas. A. Livingston. Head Office: Grimsby, Ont.

Guinea Gold Mining Co. of Ontario, Ltd.—Capital, $1,000,000. Shares, $1.00 each. Directors: Fred D. Vignie, Albert E. Jones, Wm. H. Jones, John S. Dignium, Francis Phillips. Head Office: Toronto, Ont.

Halifax Mining Co., Ltd.—Capital, $1,000,000. Shares, $1.00 each. Trustees: C. M. Cowper-Coles, A. C. Sinclair, John A. Kirk, Arthur Whittier, John E. Hooson, Wm. Cramer, A. Wilson. Head Office: Rossland, B.C. Formed to acquire the Mineral Claims known as the "John Halifax," "Ursula," "Variety" and "Combination," situate on the North Fork of the Salmon River in the Nelson Mining Division, British Columbia.

Hamilton and Rossland Gold Mining Co., Ltd.—Capital, $1,000,000. Shares, $1.00 each. Trustees: E. H. Robson, W. Acheson, G. S. Bingham, Jas. H. Good, Jas. M. Clarke, Chas. J. Wilson, Joshua E. Mill. Head Office: Rossland, B.C. Formed to purchase the "Mississippi" Mineral Claim, situate on Lake Mountain, in the Trail Creek Mining Division of West Kootenay District, in the Province of British Columbia.

Harrison Lake Mining, Development and Prospecting Company, Ltd.—Capital. $800.000. Shares $1.00 each. Trustees: Wm. G. Tretheway, Richard H. Trueman, Samuel G. Munn. Head Office: Victoria, B. C.

Harrison Lake Star Mining Co., Ltd.—Capital. $500.000. Shares $1.00 each. Trustees: C. S. Douglas, C. B. Mansell, Ben. E. Lyster, W. G. Tretheway, B. H. Graves, Jno. J. Wood. L. G. Munn. Head Office: Vancouver, B. C.

Hastings Development and Mining Co., Ltd.—Capital, $495,000. Shares $1.00 each. Directors: Jno. E. Thompson, John Lamb, Wm. Fahey. Head Office: Toronto, Ont.

Hattie Brown Gold Miuing Co., Ltd.—Registered 28th May, 1896. Head Office: Spokane. Authorized Capital, $1.000,000. To carry on mining in British Columbia.

Hattie Gold Mining Company, Ltd.—Capital, $1.000,000. Shares $1.00 each. Trustees: Montgomery Smith, W. A. Campbell, Robert Scott. Head Office: Rossland, B. C.

Havre Gold Mining Company, Ltd.—Capital, $700,000. Shares $1.00 each. Trustees: Thos. Lapslie, Philip White, A. T. Chadwick. Head Office: Rossland, B. C. Formed to purchase the "Havre" mineral claim, situate in Trail Creek Mining Division of West Kootenay, B. C.

Hay Island Gold Mining Co., Ltd.—Incorporated 1897. Capital $600,000. Shares $1.00 each. Directors: Jas. Cooper, E. B. Greenshields, Jas. R. Wilson, Jno. McIntosh, L. McMeans. Head Office: Mr. Jas. Cooper, Managing Director, Montreal. Owns and will operate in 1897 a mining location on Hay Island, Lake of the Woods, Ontario.

Heather Bell Gold Mining Co., Ltd.—Capital $1,000,000. Shares $1.00 each. Directors: John J. Withrow, Emil Nerlish, Alex. F. Webster, Isaac E. Suckling, Neil McCrimmon. Head Office: Toronto, Ont.

Heather Bell Mining and Milling Co., Ltd.—Capital, $500,000. Shares $1.00 each. Trustees: Patrick Owens, Arthur Mullen, A. G. Larsen, D. McD. Hunter. Head Office: Sandon, B.C. Formed to acquire certain claims, situate in the Trail Creek Mining Division of West Kootenay District, or elsewhere, in British Columbia.

Hercules Gold Mining Co., Ltd., seeks incorporation with the object of carrying on mining operations in the Province of British Columbia. Capital, $2,000,000, divided into 2,000,000 shares of a value of $1.00 each. Directors: W. G. Elliott, Henry A. King, W. J. Green, all of Rossland, B.C. Head Office, B.C.

Hiawatha Gold Mining and Milling Co., Ltd.—Capital $500,000. Shares $1.00 each. Directors: Benjamin Folger, James Hammond, Egbert Brant Anderson John Kelly, William James Douglas and Frank McPhillips. Head Office: Toronto, Ont.

High Ore Gold Mining and Smelting Co., Ltd.—Incorporated 14th June, 1895. Authorized capital, $500,000. Directors: Cyrus Happy, J. H. Griffith, W. G. Estess, H. L. Rodgers, D. M. McLeod. Head Office: D. M. McLeod, 201 Mohawk Block, Spokane, Wash. Owns and operates in British Columbia, in the Trail Mining District, a mineral claim upon which development work is being carried on with a small force.

Hill Top Mining Co., Ltd.—Incorporated 1896. Authorized Capital, $1,000,000. Head Office: Spokane. To mine in British Columbia.

Hopewell Gold Mining Co., Ltd.—Capital, $15,000. Shares, $50.00 each. Directors: J. G. McQuarrie, Sherbrooke, N.S.; A. F. Grant, Riverton, N.S.; Hugh Gray, Hopewell, N.S.; Robt. McLeod, Hopewell, N.S.; J. R. Porter, Stellarton, N.S.; J. M. Dunbar, Hopewell; Wm. Macdonald, Westville, N.S. Head Office; Hopewell, Pictou County, N.S.

Hub Gold Mining and Development Co., Ltd.—Capital, $600,000. Shares $1.00 each. Directors: D. O'Connor, F. Cochrane, F. B. Chapin, R. McBride, Chas. Kettyle. Head Office: Sudbury, Ont. Formed to purchase Lot number 3 in the 3rd Concession of the Township of Rathburn, situated in the District of Nipissing, and containing 320 acres, and to pay therefor by allotting to the vendors $360,000.00 of the stock of the Company, fully paid up and non-assessable.

Ibex Mining Co., Ltd.—Capital, $1,000,000. Shares $1.00 each. Trustees: G. A. Pounder, D. L. Tibbitts, John A. Scanan. Head Office: Rossland, B.C.

Ida Queen Gold Mining Co., Ltd.— Incorporated 1896. To purchase the "Ida" Mineral Claim situated in the Trail Creek Camp, West Kootenay District, B.C. Capital, $1,000,000. Shares, $1.00 each. Directors: Jas. Leddy, Seattle, Wash.; George Nelson, Rossland, B.C.; E. J. McCune and A. E. Lyford, of Rossland, B.C. Head Office: Rossland, B.C.

Idler Mining Co. (Foreign).— Capital, $1,000,000. Shares $1.00 each. Head Office: Spokane, Wash.

Imperial Gold Mining Co., Ltd.— Incorporated 1896. Authorized Capital, $1,000,000. Directors: A. W. Wright, C. R. Arnold, J. R. Clark, C. H. Bayne, F. McLeod. Mines Office: J. R. Clark. Managing Director, Rossland, B. C. Owns and is developing the Imperial and Boyce mineral claims, in the Trail Mining District, Province of British Columbia.

Indian Chief Gold Mining Company, Ltd.— Capital, $1,000,000. Shares $1.00 each. Trustees: Thos. Hulme, A. F. Corbin, J. A. Kirk. Head Office: Rossland, B. C. Formed to purchase the "Indian Chief," "Pappoose" and "Big Boy" mineral claims, all situate on the north-east side of Lower Arrow Lake, about four miles south of Deer Park Townsite, in the Nelson Mining Division of West Kootenay District, in the Province of British Columbia.

International Gold and Copper Mining Co., Ltd.— Capital, $1,000,000. Shares $1.00 each. Trustees: Archibald C. Sinclair, John S. Paterson, Robert C. Macdonald. Head Office: Rossland, B. C.

International Gold Mining Company (Foreign). — Capital, $1,000,000. Shares, $1.00 each. Head Office: Spokane, Wash.

Imperial Mining and Investment Co., Ltd.— Capital, $3,000,000. Shares $1.00 each. Trustees: M. N. Garland, W. J. Kidd, N. S. Garland, D. Oppenhiemer, Thomas H. Tracy. Head Office: Vancouver, B. C.

Iron Capping Gold Fields Mining Co. of Toronto, Ltd.— Incorporated 1896. Capital, $1,250,000, divided into 1,250,000 shares of a value of $1.00 each. Directors: A. W. McDougald, Chicago; J. Martin, Nelson, B. C.; G. Goldwin S. Lindsay, J. A. MacIntosh, J. C. Hay, Toronto.

Iron Hope Mining and Milling Co. (Foreign).—Capital, $600,000. Shares $1.00 each. Head Office: Spokane, Wash., U.S.A. Formed to acquire and work the "White Iron" and "Hope" Mining Claim No. 2, located in the Trail Creek Division of the West Kootenay District, British Columbia.

Ivanhoe Gold Mining Co.—Incorporated 1896. Head Office: Rossland, B.C. Capital, $1,000,000. Directors: D. W. Higgins, Duncan Campbell, A. M. Whiteside, J. F. Travers, J. H. Adams, C. O. Redin, and C. F. Jackson of the town of Rossland, B.C.

I. X. L. Gold Mining and Milling Co. (Foreign).— Capital, $1,000,000. Shares, $1.00 each. Head Office: Spokane, Wash., U.S.A.

Jeff. Davis Mining and Milling Co. (Foreign). — Capital, $1,000,000. Shares $1.00 each. Head Office: Spokane, Wash.

Josie Mack Mining Co. (Foreign).—Capital, $600,000. Shares, $1.00 each. Head Office: Spokane, Wash.

Jubilee Gold Mining and Development Co. of Ontario, Ltd. — Capital, $1,000,000. Shares, $1.00 each. Directors: John F. Howard, Walter D. McDougall, N. P. Wheeler, Anson McKim, Alfred H. Simpson. Head Office: Rat Portage, Ont.

Justice Gold Mining Co., Ltd.— Capital, $1,200.000. Shares $1.00 each. Trustees: E. J. McCune, A. E. Lyford, J. F. Reddy. Head Office: Rossland, B.C. Formed to purchase the Mineral Claim "Justice," situate in the Trail Creek Mining District, in the Province of British Columbia.

Kabaskong Gold Mining Co. of Ontario, Ltd.—Capital, $500,000. Shares $1.00 each. Directors: Jas. Hammond, Wm. C. Dobie, Daniel F. Burk, James Whalen, Thomas A. Gorham. Head Office: Port Arthur, Ont.

Keough Gold and Copper Mining Co. (Foreign).— Capital, $200,000. Shares $1.00 each. Head Office: Salt Lake City, Utah, U. S. A. Formed to purchase the R. Ball lode mining claim, the Aspen lode mining claim, the Delamar lode mining claim, and the Remington lode mining claim, all situate in Yale Mining District, British Columbia.

King Mining Co., Ltd.—Capital, $1,000,000. Shares $1.00 each. Trustees: Angus McNish, L. L. Workman, J. A. Kirk. Head Office: Rossland, B.C. Formed to purchase the "Eastern King" and "Western King" mineral claims, situate in the Trail Creek Division of the District of West Kootenay, in the Province of British Columbia.

King Solomon Consolidated Mining Co. (Foreign).—Capital, $1,000,000. Shares $1.00 each. Head Office: Spokane, Wash.

King Solomon's Mines, Ltd.— Capital, $500,000, divided into 500,000 shares of a value of $1.00 each. Directors: Z. G. Goldberg and A. Wheeler, Vancouver, B. C.; I. A. Yerex, of Los Angeles, Cal., and R. L. Reid, of New Westminster, B. C. Head Office: Vancouver, B. C.

Kintyre Mining and Smelting Co., Ltd.— Capital, $1,000,000. Shares $1.00 each. Trustees: A. Neal, C. McLachlan, John L. Black, J. W. Heisner, E. W. Liljegran, T. Parker, John S. Clute, Jr. Head Office: Rossland, B. C. Formed to purchase the "Maggie Extension" mineral claim, situate on Lake Mountain, in the Trail Creek Mining Division of West Kootenay, British Columbia.

Knight Templar Gold Mining Co., Ltd.—Registered 2nd May, 1896. Head Office: Spokane, Wash. Authorized Capital, $500,000. To carry on mining in British Columbia.

Kohinoor Gold Mining Co., Ltd.—Incorporated 1896 Authorized Capital $1,000,000. Officers: Samuel L. Stern, Spokane, President; Emil Richter, Spokane, Wash., Vice-President; H. L. Rodgers, Spokane, Wash., Treasurer; Abner Brown, Spokane, Wash., Secretary. Head Office: The Rookery, Spokane, Wash. Mines Office: Rossland, B.C. Owns and is operating the "British Lion," "Silver Cord," "The Wonderful," Surprise No. 6," "Lily of the Mountian," and the "Golden Bar," in the Trail Creek District, Province of British Columbia.

Kokanee Mining Co., Ltd.—Capital, $1,000,000. Shares $1.00 each. Trustees: John Wafer, Bolis Svenceski, William Murphy. Head Office: Vancouver, B.C. Formed to acquire the following mineral claims:—"Lake View," "Royal City," and "Mayflower," situate on Kokanee Creek; "Six Friends" and "Volunteer," on South Fork of Kaslo Creek; "Mountain Flower" and "Golden Bazaar," North Fork of 10 Mile Creek; "Royal Arthur" and Charmer," 2nd North Fork of Lemon Creek; and an undivided one-half interest in "Hungry Five" mineral claim, situate on South Fork of Kalso Creek, all in the District of West Kootenay, in the Province of British Columbia.

Kootenay and Algoma Gold Mining Co., Ltd.—Incorporated 1896. Capital, $1,000,000, divided into 1,000,000 shares of a value of $1.00 each. Directors: E. C. Jackson, H. Currie, E. L. Brazenor, John Leask, R. R. Gamey, Jas. McGregor, W. J. Nelson, and J. S. Clute, all of Rossland, B.C. Head Office: Rossland, B.C.

The Kootenay Chief Mining Co. Ltd.—Capital, $1,000,000. Shares $1.00 each. Trustees: Wm. Blackwood, A. T. R. Blackwood, R. Hamilton. Head Office: Revelstoke, B.C.

Kootenay Consolidated Mining Co.—Incorporated 1896. Capital, $1,000,000. Shares, $1.00 each. Head Office: Everett, Wash.

Kootenay Gold Fields Syndicate.—Registered 1896. Authorized Capital, £20,000. Head Office: 39 Lombard St., London, Eng.

Kootenay Safety Mining Co., Ltd.—Capital, $1,000,000. Shares, $1.00 each. Trustees: Geo. Moore, Walter J. Lowry, Smith Curtis. Head Office: Rossland, B.C. Formed to acquire and operate the "Daly" Mineral Claim, situate in the Trail Creek Mining Division in West Kootenay, and other mines of any kind of mineral situate in British Columbia.

Kootenay Salmon Gold Mining Co., Ltd.—Incorporated 1896. Capital, $600,000. Shares, $1.00 each. Directors: Louis Beaupre, Patrick J. Shiels, John F. Martin, Jas. K. Clark, all of Rossland, B.C. Chief place of business: Rossland, B.C.

Kootenay-Tacoma-L.C. Mining Co., Ltd. (Foreign).—Capital, $1,000,000. Shares, $1.00 each. Head Office: Tacoma, Wash.

Keewatin Gold Mining, Prospecting and Development Co., Ltd.—Capital, $750,000. Shares, $1.00 each. Directors: Saml. Hunter, Thos. A. Shaw, N. J. Hanson, R. H. Gilchrist, A. McF. Miller, Wm. McC. Miller, H. W. Echlin, C. McF. Miller. Head Office: Township of Keewatin, Ont.

Lac Seul Mining Exploration and Development Co., Ltd.—Capital, $2,000,000. Shares $1.00 each. Directors: E. E. King, W. O. Whiting, E. M. Dumas, Jno. A. Dumas. Head Office: Toronto, Ont.

Lady of the Lake Gold Mining Co. of Ottawa, Ltd.—Capital, $500,000. Shares $1.00 each. Directors: Albert Hudson, Alex. Bannerman, Arthur Seybold, John W. Wurtle, Fred'k W. Bindon. Taylor McVeity. Head Office: Ottawa, Ont. Formed to acquire, by purchase, mining location 157K, otherwise known as "Gayne's Island," in the Lake of the Woods, in the Rainy River District," of the Province of Ontario.

Lake Koo-Ka-Gaming Gold Mining and Exploring Co., Ltd.—Capital, $1,000,000. Shares $1.00 each. Directors: Wm. R. Breck, Reuben Millichamp, Wm. R. Johnston, Sydney F. McKinnon, Jas. Van Sommer, Chas. B. Jackes, Ralph K. Burgess, Edgar A. Wills, Frank Arnoldi, Andrew Darling, William Laidlaw. Head Office: Toronto, Ont.

Lake of the Woods Gold Mining Co., Ltd.—Capital, $1,000,000. Shares $1.00 each. Directors: Hugh Armstrong, Geo. Barnes, Douglas C. Cameron, Angus Carmichael, Chas. W. Chadwick, Alex. McDonald. Head Office: Rat Portage, Ont.

La Regina Gold Mining Co., Ltd.—Capital, $750,000, divided into 750,000 shares of a value of $1.00 each. Directors: Hugh McQuade, Wm. Taylor, J. St. Clair Blackett, of Rossland, and F. H. Hewlings, R. L. Drury, Victoria, B. C. Head Office: Rossland, B. C. Formed to acquire mineral claim situated in the Trail Creek Mining Division of the District of West Kootenay, B. C., known as the "La Regina" mineral claim, and to carry on mining operations elsewhere in the Province of British Columbia and the Dominion of Canada.

Leap Year Consolidated Gold Mining Co. of London, Ltd.—Capital, $1,000,000. Shares $1.00 each. Directors: James D. Balfour, Fred'k J. Hammond,

Geo. Rountree, Cassius W. Belton, John A. Groden, Geo. H. Belton, Arthur W. Mayell, Adam T. McMahen, Thomas Beattie, Charles McGregor, Jno. D. Meekison, Alex. R. McFarlane, George J. Schlief, Joseph Y. Brown. Head Office: London, Ont.

Lemon Creek Mining Co., Ltd.—Capital, $1,000,000. Shares $1.00 each. Trustees: H. A. Hicks, Chas. E. Barber. D. R. Young, Frank G. Lewis, F. S. Andrews. Head Office: Slocan City, B.C. Formed to acquire from the owners thereof the "Mamie" mineral claim, situate on the First North Fork of Lemon Creek, in the Slocan Mining Division of West Kootenay District, British Columbia.

Lerwick Gold Mining Co., Ltd.—Capital, $1,500,000. Shares $1.00 each. Trustees: Gilbert Peone, Thos. Stout, Jno. Edgren, T. Carabin, B.C. Formed to purchase the "Lerwick," "Hercules," "Snowflake" and "Big Four," mineral claims, situate in the Nelson Division of the District of West Kootenay, in the Province of British Columbia.

Leviathan Gold Mining and Milling Co., Ltd.—Capital, $2,000,000. Shares $1.00 each. Trustees: G. Reeder, G. C. Marsh, J. A. Speers, Geo. T. Cane. Head Office: Kaslo, B.C.

Lillooet Gold Reefs Mining and Milling Co., Ltd.—Capital, $200,000. Shares 25 cents each. Trustees: Chas. Coulson, Chas. Nelson, Alexander A. Boak, Hugh B. Gilmour, Peter R. Ritchie. Head Office: Vancouver, B.C.

Line Ridge Gold Mining and Milling Co., Ltd.—Capital, $1,000,000. Shares $1.00 each. Directors: Wm. L. Parish, Thos. H. R. Rea, Jno. Stinson, Wm. H. Jeffrey. Head Office: Rossland, B.C. Formed to acquire the following claims situate in the Nelson Mining Division of West Kootenay, viz: "Eldro," "Nako," and "Kalamish," Province of British Columbia.

Liscomb Lake Gold Mining Co., Ltd.—Capital, $13,000. Shares $100 each. Directors: D. Cameron, James McLeod, Robt. Drummond, Chas. E. Davies, Edwin Falconer. Head Office: Stellarton, N.S.

Little Joe Consolidated Mining Co., Ltd.—Capital, $1,000,000. Shares, $1.00 each. Trustees: E. S. Topping, Wm. E. Nesbitt, T. W. Spellman. Head Office: Trail, B.C. Formed to purchase the "Little Joe," "Western Spy Fraction," and "Kangaroo Fraction" Mineral Claims, situate on Lookout Mountain, in the Trail Creek Mining Division, B.C.

Little Jumbo Gold Mining Co.—Registered 28th July. Head Office: Seattle, Wash. Capital, $650,000. Formed to carry on mining in British Columbia.

Little Liscomb Gold Mining Co., Ltd.—Capital, $120,000 divided into 120,000 shares of a value of $1.00 each. Directors: John Power, Stellarton; C. E. Davies, Stellarton; E. Falconer, Stellarton; D. W. Culton, Stellarton; R. W. McDonald, Stellarton; Wm. Power, of Lonvay Mines, Cape Breton; and A. D. Morrison, of Big Pond, Cape Breton.

Little Maud Gold Mining Co., Ltd.—Capital, $1,000,000. Shares, $1.00 each. Trustees: Chas. O. Lalonde, John Edgrew, Edward Baillie, Jos. Vogel, Benjamin Gordon. Head Office: Rossland, B.C.

Lloyd Gold Mining and Development Co.—Incorporated 1896. Directors: J. J. Withrow, Toronto; H. J. Duffy, Rossland, B.C.; F. Kettner, Rossland, B.C.; W. J. Nelson, and John S. Clute, jr., of Rossland. Capital, $1,000,000. Shares, $1.00 each. Head Office: Rossland, B.C.

London and B.C. Alliance Syndicate, Ltd. (Foreign).—Capital, £15,100. Shares, £1 each. Head Office: London, Eng.

London and British Columbia Gold Fields.—Registered 1897. Authorized Capital, £200,000. Head Office: 3 Lawrence Pountney Hill, London, Eng.; E.

Heaseman, Secretary. Canadian Office: J. Roderick Robertson, Resident Manager, Nelson.

London and British Columbia Gold Venture Syndicate, Ltd.— Capital, $5,00,000. Shares 25c. each. Trustees: Mountjoy Squire, R. E. Bourchier, H. A. Bulwer. Head Office: Vancouver, B. C.

London and Vancouver Finance and Development Co., Ltd. (Foreign).—Capital, £100,250. Head Office: England

London Consolidated Gold Fields Exploration and Mining Co., Ltd.—Capital, $100,000. Shares 10c. each. Trustees: John Lineham, J. B. McArthur, Lorne Beecher. Head Office: Rossland, B. C.

London Gold Mining and Development Co., Ltd.—Capital, $500,000. Shares $1 00 each. Directors: Wm. F. Roome, Geo. N. Weekes, Jos. Powell, Geo. Burness, Arch. A. Campbell, Wm. Spittal, Jas. W. Butler, Wm. J. Weekes, And. Greenless, Robt. D. Miller, Solon Wolverton, M. J. Burns, Thos. E. Robson, Jas. F. Sangster, Fred. W. Daly, S. B. Coon, Walter Drew, Isaac Unsworth, Geo. D. Lockhart. Head Office: London, Ont.

Lorindale Gold Mining Company, Ltd.—Capital, $300,000. Shares $1.00 each. Trustees: John Mahrer, Thos. W. Glaholm, F. McB. Young. Head Office: Nanaimo, B. C. Formed to purchase the "Lorindale" mining claim, situate on Texada Island, in the Mining District of Nanaimo, Province of British Columbia.

Lost Creek Development Co. (Foreign).—Capital, $1,000,000. Shares, $1.00 each. Head Office: Jackson, B.C.

Lost Creek Gold Mining Co., Ltd.—Capital, $500,000. Shares, $1.00 each. Trustees: L. L. Workman, S. J. Graham, D. P. Fisher, Angus McNish. Head Office: Rossland, B.C. Formed to purchase the "Lost Creek" mineral claim, situate in the Trail Creek Division of the District of West Kootenay, in the Province of British Columbia.

Loyal Canadian Gold and Copper Mining Co., Ltd.—Capital, $2,000,000. Shares, $1.00 each. Trustees: Robt. Clark, E. Clark, F. A. Averill. Head Office: Grand Forks, B.C. Formed to purchase the "Loyal Canadian," the "Comstock," the "Piastre," the "Briton," and the "North Seattle Fraction" mineral claims, all situate in the Seattle Camp, on the North Fork of the Kettle River, in the Kettle River Mining Division of Yale District, in the Province of British Columbia.

Lucky Boy Mining and Development Co., Ltd.—Capital, $1,500,000. Shares, $1.00 each. Trustees: Saml. L. Myers, G. M. Lauridsen, W.W. Houghton, Geo. W. Myers, John Replinger. Head Office: Rossland, B.C. Formed to acquire the following mineral claims, namely: "Snow Bird," "Lucky Boy," "Winfield," "Branson" and "Kingston," situated on Sullivan Creek, all in the Trail Creek Mining Division of West Kootenay District, and the "Monday Morning," "Samuel L. Myers," and "Waffer," situated on the North Fork of Salmon River, in the Nelson Mining Division of West Kootenay District, and other mineral claims situate in the said district, or elsewhere in British Columbia.

Lucky George Mining Co., Ltd.—Capital, $1,000,000. Shares, $1.00 each. Trustees: D. J. McDougald, George Nichol, Chas. D. Rand. Head Office: Sandon, B.C. Formed to purchase the Lucky George, Innisfail, and Beaver mineral claims, situate in the Slocan Mining Division of West Kootenay District, in the Province of British Columbia.

Mackenzie Lake of the Woods Gold Mining Co., Ltd.—The operations of the Company are to be carried on in the Province of Ontario, and the chief place of business will be in Toronto. Capital, $500,000. Directors: E. Mackenzie, Thos. Shortiss, J. Flett, H. Lowdnes, H. O'Brien, all of Toronto, Ont. Head Office: Toronto, Ont.

Mammoth Gold Mining Co. of Ontario, Ltd.—Capital, $250,000. Shares 25 cents each. Directors: F. Walter, J. G. Reiner, T. B. Puddicombe, Wm. Morton, J. D. Moore, Rev. H. Dierlamm, D. Kuechtel, J. Bingeman, Chas. A. Ahrens. Head Office: Berlin, Ont.

Mandarin Gold Mining Co. of Ontario, Ltd.—Capital, $300,000. Shares $1.00 each. Directors: F. Armstrong, Jno. M. Bowman, Chas. S. Boon, E. J. Hearn, Edward Morgan, H. T. Machell, S. W. McKeown, Chas. McKenna, Alex. Pearse, S. N. Robinson, C. C. Robinson, Wm. Sanderson, Wm. F. Tasker, Edward C. Carpenter. Head Office: Toronto, Ont.

Manitou Gold Mining Co., Ltd.—Capital, $1,000,000. Shares $1.00 each. Directors: Anthony Blum, John Keddy, D. Anson Reesor, Wm. Francis Wilson, Alexander Fraser, J. Sutherland, and Albert Edward Philp. Head Office: Rat Portage, Ont.

Manitou Gold Mining Co.—Incorporated 1895. Capital, $500,000. Head Office: 103 Bay Street, Toronto. Formed to carry on mining in the District of Algoma, Rainy Lake and Lake of the Woods. Directors: Simeon H. Janes, W. H. Cawthra and Edmund Bristol, all of Toronto.

Mannamead Gold Mining Co., Ltd.—Capital, $1,500,000. Shares 1.00 each. Trustees: Alex. R. McLennan, Francis S. Hobbs, Jno. E. Crane, Montague Field. Head Office: Rossland B.C. Formed to acquire the mineral claims known as the "Berwick," "Carlyle," and "Mable" mineral claims, situate on the North Fork of the Salmon River, in the Nelson Mining Division of West Kootenay District, British Columbia.

Maple Leaf Mining and Development Co., Ltd.—Capital, $1,000,000. Shares $1.00 each. Trustees: Michael Costello, Wm. Hickey, Mark S. Rose. Head Office: Vancouver, B. C. Formed to acquire the following mineral claims: "Maple Leaf," situate on 49 Creek, 7 miles from Nelson; "Santa Maria," "St. Anthony," "Henry" and "Erin," situate on Phillips' Arm; "Monocacy," situate on Keat's Island; "Angola," situate on Lynn Creek; "Fall Creek;" "The Star," situate half a mile north of Eagle Harbor; "St. Mary," situate on Gambier Island; and "St. John."

Margurete Gold Mining and Smelting Co., Ltd.—Capital, $1,000,000. Shares, $1.00 each. Trustees: Frank W. Hart, Wm. B. Townsend, Henry J. Williams, John A. McRae, John A. Campbell, Edward White, Sydney Stride, John Graden, Wilson Pyper, Wm. H. Gordon. Head Office: Rossland, B. C. Formed to acquire the "Margurete," "St. Luke" and "St. Jacob" mineral claims situate on the west side of the north fork of the Salmon River, in the Nelson Mining Division of West Kootenay District, British Columbia.

Mascot Gold Mining Co., Ltd.—Capital, $1,000,000. Shares $1,00 each. Trustees: C. M. Carpenter, E. M. Shupe, Duncan Campbell, M. D. Head Office: Rossland, B. C. Formed to purchase the Mascot Fractional mineral claim, situated in the Trail Creek Mining Division of the District of West Kootenay, British Columbia.

Megatherium Gold Mining Co. of Jackfish, Ont., Ltd.—Capital, $100,000. Shares $1,000.00 each. Directors: Chas. B. Jackes, Thos. Hunter, J. M. Staebler, C. R. S. Dinnick, B. K. Burden. Head Office: Toronto, Ont. Formed to take over a certain mining property, situated at Jackfish, in Thunder Bay District, Ontario, and known as A. L. 227, and to carry on in all its branches the business of a mining, milling, reduction and development company.

McGoun Gold Mining Co. of Parry Sound, Ont.—Capital, $1,000,000. Shares $1.00 each. Directors: Thos. McGoun, Sr., P. McCurry, H. N. Crossley, Wm. R. Beatty, David MacFarlane, Donald W. Ross, James Calder. Head Office: Parry Sound, Ont.

Michigan Gold Mining and Development Co., Ltd.—Capital, $1,500,000. Shares $1.00 each. Trustees: C. McLachlan, Alvin Neal, Judge John L. Black, Capt. J. W. Heisner, G. H. Green, J. S. Clute, E. W. Liljogram. Head Office: Rossland, B. C.

Mikado and Korinto Gold Mining and Milling Co., Ltd.— Capital, $1,000,000. Shares, $1.00 each. Trustees: Hector McPherson, John Box, William R. Ross. Head Office: Rossland, B.C. Formed to acquire the Mineral Claims "Mikado" and "Korinto," situate in the Trail Creek Mining Division of West Kootenay District, in the Province of British Columbia.

Mineral Hill Gold Mining Co. of Alberni, Ltd. — Incorporated 1896. Authorized Capital, $750,000. Directors: A. A. Davidson, Victoria; W. A. Dier, Victoria; Lawrence Goodacre, Victoria, and W. K. Leighton, Nanaimo. Head Office: Victoria, B.C. Formed to acquire and work the Standard, Daisy, Queen of Diamonds, Lucky Boy, and Northern Light Mineral Claims, situate in the District of Alberni, Vancouver Island.

Mineral King Mining and Development Co. of Ontario, Ltd.— Capital, $100,000. Shares, $1.00 each. Directors: Wm. T. Strong, Edmund Meredith, Chas. B. Hunt, Geo. B. Kirk, Arthur H. Brown. Head Office: London, Ont.

Minerva Mining Co., Ltd.— Capital, $200,000. Shares 5 cents each. Trustees: Jno. A. Wilson, F. R. Sargison, Geo. S. Angus. Head Office: Victoria, B.C. Formed to purchase the "Minerva" Mineral Claim, situate on Granite Creek, in the Ainsworth District of West Kootenay, British Columbia.

Miocene Gravel Mining Co. of Cariboo, Ltd.--Capital, $300,000. Shares $10 each. Trustees: R. H. Campbell, F. J. Coulthard, Gordon Drysdale. Head Office: New Westminster, B.C. Formed to acquire the placer mining claims in the Quesnelle Mining Division of the Province of British Columbia, known as the "Diamond," the "Cyclone," the "Harper Lake." the "Beaver Lake," the "Mountain Tip," the "Slide," the "Capitol," "El Capitan," the "Junction," the "Beaver Dam," and the "Lava Point," and also to acquire, by gift, pre-emption, purchase, exchange, or any other lawful means, any other placer mining claims, or mineral claims, or leases, or other mining property in the Province of British Columbia.

Mississaga River Gold Mining Co. of Ontario, Ltd.—Capital, $490,000. Directors: James B. Dobie, Thomas E. Williams, Rich'd Musgrove. Head Office: Thessalon, Ont. Formed to carry on mining in the District of Algoma or elsewhere in the Province of Ontario.

Monarch Gold Mining Co., Ltd.--Capital, $1,000,000. Shares $1.00 each. Trustees: J. Howie, C. Rapp, W. Brown, W. Harp, A. Pocock, W. W. Dickson. Head Office: Rossland, B.C. Formed to purchase the "Monarch," "Mogul," "Forest King," and "Big Chief" mineral claims, situate in the Trail Creek Division of the District of West Kootenay, in the Province of British Columbia.

Montezuma Gold Mining Co., Ltd.— Capital, $1,000,000. Shares $1.00 each. Trustees: Robert C. Macdonald, Jno. G. Houghton, Geo. E. Toms, Joseph W. Boyd, Norman L. Jackson. Head Office: Rossland, B.C. Formed to acquire a certain mineral claim known as the "Retaliation" Mineral Claim, situate on Deer Park Mountain near the Town of Rossland, in the District of West Kootenay, British Columbia.

Montreal Consolidated Mines Co., Ltd.—Capital, $25,000. Shares $1.00 each. Directors: Frederick Fairman, John Torrance, Philip Johnson, Wm. H. Masterman, Jas. Cooper. Head Office: Montreal.

Morning Glory Mining Co.—Head Office: Vernon, B.C. Capital, $500,000. Directors: A. E. Morden, J. N. Morden, and J. E. Morden. Formed to acquire the mineral claim "Morning Glory," situate on the east side of Okanagan Lake, District of Yale, British Columbia.

Morrison Gold Mining Co.—Registered 30th May, 1896. Authorized Capital, $1,000,000. Head Office: Spokane, Wash. Formed to carry on mining in British Columbia.

Mountain Goat Mining Co., Ltd.—Capital, $1,000,000. Shares $1.00 each. Trustees: Geo. W. Richardson, Frank A. Baird, F. M. McLeod. Head Office: Rossland, B.C.

Moyie Mining Co., Ltd.—Capital, $240,000. Shares $5.00 each. Trustees: Chas. Wilson, Edward P. Davis, Frank Houghton. Head Office: Vancouver, B.C. Formed to acquire and work the "Moyie" and "Queen of the Hills," situate in the Fort Steele Mining Division of the District of East Kootenay, in the Province of British Columbia.

Muggins Mining Co., Ltd.—Capital, $1,000,000. Shares $1.00 each. Trustees: Robert B. Skinner, Hugh F. Keifer, David G. Marshall. Head Office: Vancouver, B.C.

Multum in Parvo Prospecting Syndicate, Ltd.—Capital, $20,000. Shares $100.00 each. Trustees: Wm. Crickmay, Hugh B. Walkem, Joseph E. Miller, John M. Bowell. Head Office: Vancouver, B. C.

Murphy Creek Gold Mining Co., Ltd.—Capital, $1,000,000. Shares $1.00 each. Trustees: N. B. Bergstorm, A. M. Nelson, E. J. McCune, A. E. Lyford. Head Office: Rossland, B. C. Formed to purchase the "Rocky Point," "Rocky Mountain," "Negaunee" and "Lucky Seven" mineral claims on Murphy Creek, in Trail Creek Mining Division of West Kootenay District, British Columbia.

Nanke-Poo Gold Mining Co. of Ottawa, Ltd.—Capital Stock, $1,000,000. Shares $1.00 each. Directors: Albert H. Edminson, John M. Clark, Wm. A. Clark, Angus W. Fraser, Joseph B. Smith. Head Office: Ottawa, Ont.

National Gold and Silver Mining Co., Ltd.—Capital, $1,000,000. Shares $1.00 each. Trustees: J. A. Turner, J. F. Malkin, E. C. Traves. Head Office: Nelson, B. C.

Nelson, Slocan & Lardeau Gold Mining and Development Co., Ltd.—Capital, $500,000. Shares $1.00 each. Trustees: Wm. A. Jowett, Thos. A. Skilliter, Chas. R. Tryon, J. F. Hume, Chas. Hitlyer. Head Office: Nelson, B. C.

Neepawa Gold Mining Company of Ontario, Ltd.—Capital, $1,000,000. Shares $1.00 each. Directors: David H. Harrison, John A. Davidson, Bethuel R. Hamilton, James H. Davidson, Alexander Trotter. Head Office: Rat Portage, Ont.

New Brunswick Consolidated Gold Mining Co., Ltd.—Capital, $1,000,000. Shares $1.00 each. Trustees: S. T. Langley, Jno. W. Fear, William R. Goodeve, Frank O. Lawrence. Head Office: Rossland, B. C.

Nest Egg and Fire Fly Gold Mining Company, Ltd.—Capital, $1,000,000. Shares $1.00 each. Trustees: Patrick A. O'Farrell, Charles Hayward, A. J. Weaver-Bridgman, C. A. Holland. Head Office: Victoria, B. C. Formed to purchase the Nest Egg and Fire Fly mineral claims, situate in the District of West Kootenay, British Columbia.

New Fraser River, Ltd.—Registered 1897. Authorized Capital, £75,000, in shares of £1. Head Office: W. A. Stearns, Secretary, 23 Leadenhall St., London, E.C., England.

New Goldfields of British Columbia, Ltd.—Registered 1897. Authorized Capital, £250,000. Head Office: W. A. Stearns, Secretary, 23 Leadenhall Street, London, E.C., England.

New Victor Mining Co., Ltd.—Capital, $175,000. Shares 25 cents each. Trustees: G. J. Wilson, Francis Bowser, T. G. Mitchell, W. J. Bowser. Head

Office: Vancouver, B.C. Formed to acquire and work the mineral claims known as the "New Victor," "Royal," and "Excelsior," situate on Wild Horse Creek, in the Nelson Mining Division of the West Kootenay Mining District, in the Province of British Columbia.

Nitinat Gold Mining and Development Co., Ltd.—Capital, $1,000,000. Shares, $1.00 each. Trustees: T. J. Jones, James Hutcheson, W. L. Challoner. Head Office: Victoria, B.C. Formed to purchase the "Louise" and "Lucile" Mineral Claims, situate in the Victoria Mining Division of Vancouver Island District, in the Province of British Columbia.

Noblesse Gold Mining Co., Ltd,—Capital, $150,000. Shares 10 cents each. Trustees: Fritz W. Bauer, Thomas Parker, Alexander C. Galt, Ernest W. Liljegran. Head Office: Rossland, B.C. Formed to purchase the "Mayflower" and "Last Chance" Mineral Claims, situate on Sullivan Creek, in the Trail Mining Division of West Kootenay, British Columbia.

Noonday Mining Co., Ltd.—Capital, $1,000,000. Shares $1.00 each. Trustees: John Kirkup, R. Dalby Mackill, Jr., F. H. Armstrong, J. St. Clair Blackett, William G. Mackenzie. Head Office: Rossland, B.C. Formed to purchase the "Noonday," "Copper Belle," and "Irma" Mineral Claims, situate on Salmon River, in the Nelson Mining Division of West Kootenay District, either for money or fully paid up shares of the Company, and to prospect, work, explore, develop, etc.

North Folk Mining Co., Ltd.—Capital, $125,000. Shares 25 cents each. Trustees: Geo. F. Baldwin, Walter E. Gravely, G. W. Hutchings, T. W. Smirl, W. E. Johnston. Head Office: Vancouver, B.C. Formed to acquire the mineral claims known as the "Aberdeen," "Inverness," and "Hammill," situated on the North Fork of the Salmon River, in the District of Kootenay, Province of British Columbia.

Northern Light Gold Mining Co., Ltd.—Incorporated 1896. To purchase the "Northern Light" mineral claim situate on Goat Mountain, in the Goat River District, West Kootenay, B.C. Capital, $250,000. Shares, $1.00 each. Directors: E. Hall, John Jardine, A. McCrimmon, J. L. Forrester, J. Freel, J. Maynard and John McRobbie, all of Victoria, B.C. Head Office: Victoria, B.C.

Northern Ontario Gold Mining Co., Ltd.—Capital, $1,000,000. Shares $1.00 each. Directors: Arthur J. Jackson, George Drewry, James M. Savage, George Girard, Jno. W. Colcleugh. Head Office: Rat Portage, Ont. Formed to carry on mining in the District of Rainy River or elsewhere within the Province of Ontario.

North Salmon River Gold Mining Co. (Foreign)—Capital, $1,000,000. Shares $1.00 each. Head Office: Spokane, Wash.

North Star Gold Mining and Development Co. (Foreign).—Capital, $1,000,000. Shares $1.00. Head Office: Spokane, Wash.

Nugget Gold Mining Co. of Rat Portage, Ltd.—Capital, $50,000. Shares $1.00 each. Directors: David E. Adams, John Dick, Richard Hall, Archibald Harstone, Herman Kobold, Robt. A. Hawie, James C. Simpson. Head Office: Rat Portage, Ont.

Novelty Gold Mining Company (Foreign).— Capital, $1,000,000. Shares $1.00 each. Head Office: Spokane, Wash. Formed to carry on mining in British Columbia.

Observation Mountain Gold Mining Co., Ltd.—Capital, $1,500,000. Shares $1.00 each. Trustees: G. Earl McCarter, William Schumck, L. S. Henricks, Joseph K. Johnson, John G. Wright. Head Office: Grand Forks, B. C. Formed to acquire six claims on Observation Mountain, viz.: "The Crown Jewel," "The Golden Nugget," "The Pay Ore," "The American Belle," "The Quartz King," "The Western Queen;" and to acquire by purchase and afterwards develop a group of two claims on Hardy Mountain, near Grand Forks, B. C., viz.; "The Vesuvius," "The Leila," British Columbia.

Old Dominion Mining and Development Co., Ltd.—Capital, $1,000,000. Shares $1.00 each. Trustees: C. F. P. Conybeare, J. L. Parker, W. A. Galliher. Head Office: Rossland, B. C. Formed to acquire and work the mineral claims known as the "Old Dominion" and "El Dorado," situated on the East Fork of the North Fork of the Salmon River, in the Nelson Mining Division of the West Kootenay District of British Columbia.

Old Glory Mining Co.—Incorporated 1896. Capital, $1,000,000, divided into 1,000,000 shares of a value of $1.00 each. Head Office: Seattle, Wash.

Old Gold Quartz and Placer Mining Co., Ltd.—Capital, $1,500,000. Shares, $1.00 each. Trustees: G. A. Pounder, M. F. Chesnut, J. M. Miller. Head Office: Rossland, B.C. Formed to acquire the following six mineral claims, viz.: "Little Chief," "M. C. and T.," "Gem," "Grace C.," all situate on the North Fork of the Salmon River, in the Nelson Mining Division of West Kootenay District, and the "Lillian Ray" and the "Venture," both situate on Whiskey Creek, in said Mining Division, Province of British Columbia.

Old Ironsides Mining Co.—Incorporated 1896. Capital, $1,000,000, divided S. E. Rigg, President; J. P. Graves, Vice-President; A. L. White, Sec.-Treasurer. Trustee: S. E. Rigg, J. P. Graves, A. L. White, H. P. Palmerston, W. A. Ritchie, all of Spokane, Wash.; and R. E. Straborn, of Boston. Mines Office: Rossland, B.C. Head Office: Spokane, Wash. Formed to acquire and work the "Old Ironsides" claim, Greenwood Camp, Boundary Creek District, Province of British Columbia.

Olga Gold Mining and Milling Co. (Foreign).—Capital, $1,000,000. Shares $1.00 each. Head Office: Tacoma, Wash.

Olive Mining and Smelting Co.—Incorporated 1896. Capital $20,000,000, divided into 20,000,000 shares of a value of $1.00 each. Head Office: Spokane, Wash.

Ontario Gold Co.—Head Office: Spokane, Wash. Capital $1,000,000. Formed to mine in B.C.

Ora-Plata Mining Co., Ltd.—Capital, $1,500,0000. Shares $1.00 each. Trustees: Wm. Bennison, W. H. Fife, John R. Reavis, T. G. Elgie, H. E. Cover, John W. Cover, W. J. Green. Head Office: Rossland, B.C.

Oriole Gold Mining Co. of Saw Bill Lake, Ltd.—Capital, $150,000. Shares $1.00 each. Directors: Wm. C. Phillips, W. Seldon, F. D. Porter, C. A. Dobson, Jos. Brimson. Head Office: Toronto, Ont.

Orphan Boy Gold Mining Co., Ltd.—Capital, $700,000. Shares $1.00 each. Trustees: E. H. Wedekind, Jno. W. Haskins, Fred C. Whitney. Head Office: Revelstoke, B. C. Formed to acquire and work mineral claims in British Columbia.

Ottawa Gold Milling and Mining Co., Ltd.—Capital, $1,000,000. Shares $1.00 each. Directors: John Mather, Edward Seybold, James Gibson, Wm. A. Clark, Angus W. Fraser. Head Office: A. W. Fraser, Secretary, Ottawa, Ont.

Ottawa Gold Mining Co., Ltd.—Capital, $250,000. Shares, $1.00 each. Trustees: Geo. A. Pounder, Geo. E. Toms, John A. Pounder. Head Office: Rossland, B. C.

Pacific Consolidated Gold Mining Co., Ltd.—Incorporated 1896. Capital, $500,000, divided into 500,000 shares of a value of $1.00 each. Directors: Geo. M. Perdue, Josiah Hemans and Charles N. Gowen, all of Victoria. Head Office: Victoria, B. C. Formed to acquire the mineral claims situated within the Alberni Mining Division of Alberni District on Vancouver Island, and known as the "Minerva Casad" and "Happy Day" mineral claims, and to carry on mining operations elsewhere in the Province of British Columbia and the Dominion of Canada.

Pasadena Consolidated Gold Mining Co., Ltd.— Capital, $1,000,000. Shares $1.00 each. Trustees: Wm. H Meldrum, Albert E. Lech, Alex. Morrison, Wm. H. Armstrong, Robt. Hamilton. Head Office: Vancouver, B. C.

Pathfinder Mining Reduction and Investment Co., Ltd.—Capital, $1,000,000. Shares $1.00 each. Trustees: Thos. Parkinson, Wm. A. Pleifer, Jas. E. Walker. Head Office: Grand Forks, B. C. Formed to purchase the Pathfinder mineral claim, situated on the North Fork of Kettle River, in the Kettle River Mining Division of Yale District, in the Province of British Columbia, and any mineral claims in the said camp or elsewhere in the Province of British Columbia.

Pearl Gold Mining Co., Ltd.— Capital, $150,000. Shares 10 cents each. Trustees: C. O. Lalonde, J. Kirkup, J. S. Clute, Jr., W. A. Blair, S. Forteath, and T. Parker. Head office: Rossland, B.C. Formed to purchase the "Pearl" and "Proud Chief" mineral claims, situate on Sullivan Creek, in the Trail Creek Mining Division of West Kootenay, British Columbia.

Phillips Arm Gold Mines, Ltd.—Capital, $500,000. Shares 50 cents each. Trustees: Chas. F. Law, Jas. G. Syme, Harry Rhodes. Head Office: Vancouver, B.C. Formed to acquire the following mineral claims at Phillips Arm, in the Coast District of British Columbia, known as the "Duchess," the "Duke," the "Highland Laddie," the "Alexandra," the "Jubilee" (fractional), the "Emperor" (fractional), and the "Waterloo" (fractional), and any other mineral claims or placer mining claims or leases, or other mining property, in the Province of British Columbia.

Phœnix Gold Mining Co., Ltd.— Capital, $20,000. Shares $50.00 each. Directors: Geo. F. Mackay, Evan Kennedy, Jas. A. Fraser, John Fraser, Cameron Fraser. Head Office: New Glasgow, N.S.

"Pick-Up" Mining and Smelting Co.—Capital, $1,000,000. Shares $1.00 each. Trustees: Frank J. Walker, Joseph Coleman, Tom C. Gray. Head Office: Rossland, B.C. Formed to purchase the "Pick Up" mineral claim, situated in the Trail Creek Mining Division in the District of West Kootenay, British Columbia.

Pine Ridge Gold Mining and Milling Co., Ltd.— Capital, $1,000,000. Shares $1.00 each. Directors: W. L. Parish, Thos. H. Rea, J. Stinson, W. H. Jeffery. Head Office: Rossland, B.C. Formed to acquire and work the following claims situate in the Nelson Mining Division of West Kootenay, B.C., viz.: "Elpro," "Nako," and "Kalamish."

Pittsburg and Cariboo Gold Dredging Co., Ltd.— Incorporated 1895. Authorized Capital $200,000. Canadian Office: F. E. Young, General Manager, Barkerville, B.C.

Pittsburg Gold Mining Co.—Capital, $750,000. Directors: F. T. Schooley, A. B. Clabon, John McLaren, W. R. Hall, M. J. Brown, R. Thornton, David McBeath and T. H. Armstrong. Head Office: Rossland, B. C. Formed to purchase the "Pittsburg No. 1" and the "Yellow Copper" mineral claims, situate in Trail Creek Mining Division of West Kootenay District, and to prospect, work, develop and turn to account the said mineral claims.

Plutus Gold Mining Co. of Sault St. Marie, Ltd.— Capital, $750,000. Shares $1.00 each. Directors: Donald McGregor, John Dawson, William Brown, Benjamin Boyer, Henry C. Hamilton. Head Office: Sault St. Marie, Ont.

Poorman Gold Mining Co.—Incorporated 1895. Capital, $500,000. Directors: Patrick Clark, John A. Finch, Austin Corbin, J. F. Herrick, A. T. Herrick, E. J. Roberts, W. J. C. Wakefield. Head Office: F. E. Lucas, Spokane, Wash. Mines Office: Rossland, B. C. Owns the Poorman mineral claim, Trail District, Province of British Columbia.

Portland Gold Mining Co.— Capital, $600,000, divided into 600,000 shares of a value of $1.00 each. Head Office: Spokane, Wash. Formed to acquire

the Portland mining claim, situated on or about Champion Creek, British Columbia, and to carry on mining operations in the Province of British Columbia and elsewhere in the Dominion of Canada.

Premier Gold Mining Co. of Ottawa, Ltd.— Capital, $500,000. Shares $1.00 each. Directors: N. A. Goodwin, H. W. Chamberlin, A. Hudson, Alex. Bannerman, Taylor McVeity. Head Office: Taylor McVeity, Ottawa, Ont.

Premier Gold Mining Co. of Ontario, Ltd.— Capital, $495,000. Shares $1.00 each. Directors: Jno. P. Martyn, Henry Lindop, James H. Coyne, Chas. Norsworthy, John Stacey. Head Office: St. Thomas, Ont.

Premier Gold Mining Co,. Ltd.—Capital, $150,000. Shares 10 cents each. Trustees: Wesley A. Blair, Alex. C. Galt, Samuel Forteath, Alfred E. Suckling, Thomas Parker. Head Office: Rossland, B. C. Formed to purchase the "Skilligalee" and "Golden King" mineral claims, situate on Sullivan Creek, in the Trail Creek Mining Division of West Kootenay, British Columbia.

Preston Gold Mining Co. of Seine River, Ltd.— Capital, $50,000. Directors: Wm. Blackwood, Winnipeg; W. A. Preston, Mines Centre, Ont.; Dr. A. H. Simpson, Winnipeg. Head Office: Rat Portage, Ont. Formed to carry on mining in the District of Rainy River, Ont.

Primrose Gold Mining Co., Ltd.—Capital, $1,000,000. Shares $1.00 each. Trustees: G. A. Pounder, M. F. Chesnut, J. A. Pounder. Head Office: Rossland. B. C. Formed to acquire the mineral claim known as the "Minnie No. 2," situate on Red Mountain, north-east of the "Big Trout" and "Blue Elephant," in the Trail Creek Mining Division of West Kootenay District, British Columbia.

Prince Edward Gold Mining Co. (Foreign).—Capital, $1,000,000. Shares $1.00 each. Head Office: Spokane, Wash.

Prince Mining and Development Co., Ltd.— Capital, $1,000,000. Shares $1.00 each. Trustees: Thos. H. Ingram, Geo. S. McCarter, M. Dainard: Head Office: Golden, B. C.

Prospector's Mutual Gold Mines Co. of British Columbia, Ltd.— Capital, $500,000. Shares 25 cents each. Trustees: G. L. Center, Geo. J. Wonder, M. J. Blanchfield. Head Office: Vancouver, B. C.

Pure Gold Mining Co., Ltd.—Capital $1,000,000. Shares $1.00 each. Trustees: W. C. Archer, Albert P. Hunter, J. M. O'Toole, A. H. McKay, D. D. Birks. Head Office: Rossland, B.C. Formed to purchase the "Pure Gold," "Trilby," and "Escort" mineral claims, situate near Christina Lake, in the Trail Creek Mining Division of West Kootenay District, British Columbia.

Queen Bee Gold Mining Co. of Ottawa, Ltd.—Capital $1,000,000. Shares $1.00 each. Directors: Levi Crannell, Walter G. Bronson, William A. Clark, Angus W. Fraser, J. Burley Smith. Head Office: A. W. Fraser, Sec.-Treas., Ottawa, Ont.

Queen Bee Gold Mines, Ltd.—Capital $250,000. Shares 25 cents each. Trustees: John T. Carroll, M.D., Michael Costello, George B. Harris. Head Office: Vancouver, B.C. Formed to purchase the "Bully Boy" and "Queen Bee" mineral claims, situate on the north-west end of Valdez Island, in the Mining Division of Nanaimo, in the Province of British Columbia.

Queen Gold and Silver Mining Co.—Head Office: Vancouver, B.C. Capital $500,000. Directors: Wm. Teague, Benjamin Douglas, and John McQuillan. Formed to mine in B.C.

Queen of the Lakes Gold Mining and Development Co. of Ontario, Ltd.—Capital $1,000,000. Shares $1.00 each. Directors: David H. Harrison, Jno. A. Davidson, Jno. F. Howard, George F. Bryan, Abraham Buehler, Wm. R. Mulock. Head Office; Rat Portage, Ont.

Queen Victoria Gold Mining Co., Ltd.—Capital $1,000,000. Shares $1.00 each. Trustees: Alex. McCarter, Robert Dixon, F. W. Bauer, John S. Clute, Jr. Head Office: Rossland, B.C.

Quesnelle Mining Co. (Foreign).—Capital $1,000,000. Shares $100.00 each. Head Office; Chicago, Ill.

Rainy Day Gold Mining Co., Ltd.— Capital, $600,000. Directors: John A. Kirk, J. B. Chantrell, H. E. A. Courtenay, and H. S. Jones, all of Rossland, B. C. Head Office: Rossland, B. C. Formed to purchase the Rainy Day mineral claim, situate in the Trail Creek Mining Division of West Kootenay District, British Columbia.

Rainy River Gold Mining Co., Ltd.— Capital, $1,000,000. Shares $1.00 each. Directors: Thos. Walsh, Thos. R. Deacon, Nelson Schuarr, Harry Wright, Chas. E. Neads, Henry Langford. Head Office: Rat Portage, Ont.

Ramsdell Mining and Milling Co. (Foreign).—Capital, $1,000,000. Shares $1.00 each. Head Office: Tacoma, Wash.

Randolph Gold Mining Co.— Capital, $750,000. Head Office: Spokane, Wash. To carry on mining in British Columbia.

Raven Copper and Gold Co. (Foreign).— Capital, $1,000,000. Shares $1.00 each. Head Office: Seattle, Wash.

Red Eagle Gold Mining Co., Ltd.—Capital $1,200,000. Shares $1.00 each. Trustees; William Bennison, W. H. Fife, T. G. Elgie, John Gloyn, John W. Cover. Head Office: Rossland, B.C.

Red Horse and Salmon River Mining Co., Ltd.—Capital $1,000,000. Shares $1.00 each. Trustees: Eugene S. Topping, John C. McLagan, John S. Clute, Ralph White, Jas. M. McGregor, John T. Wilkinson. Head Office; Vancouver, B.C. Formed to acquire the mineral claims known as the "Red Horse" and "Blue Grouse," situated in the Nelson Mining Division in the District of West Kootenay, in the Province of British Columbia.

Red Mountain Ida Mountain Gold Mining Co., Ltd.—Capital $1,000,000. Shares $1.00 each. Trustees; Robt. Scott, C. O. Lalonde, James Hunter. Head Office; Rossland, B.C. Formed to purchase the "Ida May" Mineral Claim, situate on Red Mountain, in the Trail Creek Mining Division of West Kootenay District, B.C.

Red Mountain View Gold Mining Co.—Capital $1,000,000. Head Office: Rossland, B.C. Directors; W. G. Johnson, Judge Spinks, I. N. Campbell. Formed to purchase the "View" claim, Trail Creek District, B.C.

Red Point Gold Mining Co., Ltd.—Capital $1,000,000. Shares $1.00 each. Trustees: Patrick G. Nash, Jas. K. Clark, Jos. F. Ritchie. Head Office; Rossland, B.C.

R. E. Lee Gold Mining Co., Ltd.—Capital $2,000,000. Shares $1.00 each. Trustees; William W. Spinks, Thomas S. Gilmour, Chas. R. Hamilton, Wm. G. Johnson, Daniel M Linnard. Head Office; Rossland, B.C. Formed to purchase the "R. E. Lee" and "Maid of Erin" mineral claims, situate on the north-west slope of Lake Mountain, about one mile south-east of Rossland, in the Trail Creek Mining Division of West Kootenay, in the Province of British Columbia.

Republic Gold Mining Co., Ltd.—Registered 30th May, 1896, Authorized Capital, $750,000. Head Office, Spokane, Wash. Formed to carry on mining in British Columbia.

Rio Grand Gold and Silver Mining Co.—Capital $1,600,000. Shares $1.00 each. Trustees: F. M. Davis, John W. Gibson, J. W. O'Connell, A. C. Fry, Solomon Lauriden. Head Office: Rossland, B.C. Formed to purchase the Rio

Grand, Shampane, Sandaulphon, and the Floral Float mineral claim, all situate in the Nelson Mining Division of West Kootenay, in the Province of British Columbia.

Rob Roy Gold Mining Co.—Head Office: Spokane, Wash. Capital, $500,000. To mine in British Columbia.

Rock Creek Gold Mines, Ltd.—Capital $500,000. Shares 25 cents each. Trustees: Thos. B. Hall, Simon Leiser, Theodore Lubbe, Robert P. Rithet, Thos. W. Patterson, Benj. W. Pearse. Head Office: Victoria, B.C. Formed to purchase the Victoria mineral claim, known as Lot No. 218, Group 1, Osoyoos Division of Yale District, Province of British Columbia, also the Queen and California mineral claims, situate and being in the vicinity of Rock Creek, in the said Osoyoos Division of Yale District.

Rock Creek Gold Mining Co.—Capital $800,000. Shares $1.00. Head Office: Spokane, Wash.

Rock Creek Mining and Development Co., Ltd.—Capital $1,000,000. Shares $1.00 each. Trustees: Thos. McDonnell, J. C. Haas, G. B. Taylor. Head Office: Yale, B.C.

Roderick Dhu Gold Mining Co., Ltd.—Incorporated 1896. Formed to purchase the "Roderick Dhu" mineral claims, situate on Deer Park Mountain, in Trail Creek Mining Division of West Kootenay, in the Province of British Columbia. Capital $1,000 000, divided into 1,000,000 shares of $1 each. Directors: F. J. Walker, Geo. H. Bayne, D. M. Linnard, Rossland, B.C.

Rossland and Green Mountain Gold Mining and Development Co., Ltd.—Capital $1,000,000. Shares $1.00 each. Trustees: J. J. Moynahan, A. Kelly, J. M. Robinson, J. M. Clarke, Frank A. McKenzie, Thos. M. Daly, F. W. Peters. Head Office: Rossland, B.C. Formed to purchase "The Diamond Flush," "The Ace of Diamonds," and "The Lone Star Mineral Claims, situate on the north slope of Green Mountain, in the Trail Creek Mining Division of West Kootenay District, in the Province of British Columbia.

Rossland and Trail Creek Mining Co., Ltd. (Foreign).—Capital $1,000,000. Shares $1.00 each. Head Office: Rossland, B.C.

Rossland Eastern Gold Mining Co., Ltd.—Capital $1,000,000. Shares $1.00 each. Trustees: D. Wallace McLeod, H. Bruce Findley, James H. Good, George D. Root, Wm. G. Sivyer. Head Office: Rossland, B C. Formed to purchase the "Monarch," "Gladstone," "Australia," "Last Chance," and "Lucky Number" mineral claims, situate on Sophia Mountain, in the Trail Creek Mining Division of West Kootenay District, in the Province of British Columbia.

Rossland Gold Bug Mining Co. (Foreign).—Capital $1,000,000. Shares $1.00 each. Head Office: Spokane, Wash.

Rossland Homestake Gold Mining Co., Ltd.—Incorporated 1896. Capital $1,000,000, divided into 1,000,000 shares of $1.00 each. Directors: W. G. Johnson, D. M. Linnard, G. H. Bayne, all of Rossland, B. C. Formed to acquire and work the "Homestake" Mining Claim, Lot No. 936, Group One, West Kootenay, B.C., and carrying on mining operations elsewhere in the Province of British Columbia and the Dominion of Canada.

Rossland La Belle Mining and Development Co., Ltd.—Capital, $1,000,000. Shares $1.00 each. Trustees: J. J. Moynahan, W. H. Fortier, Eugene S. Topping. Head Office: Rossland, B.C. Formed to purchase the "La Belle" mineral claim, situate in the Trail Creek Division of the District of West Kootenay, in the Province of British Columbia.

Rossland United Gold Mining Co. (Foreign).—Capital $1,000,000. Shares $1.00 each. Head Office: Seattle, Wash.

Royal Five Gold Mining Co., Ltd.—Capital $1,500,000. Shares $1.00 each. Trustees: D. W. Higgins, Ross Thompson, John Y. Cole, S. Thornton Langley, John M. Repass. Head Office: Rossland, B.C.

Royal Victoria Gold Mining Co., Ltd.—Capital $1,000,000. Shares $1.00 each. Trustees: John F. McRae, John Gloyn, W. A. Campbell. Head Office: Rossland, B.C. Formed to purchase the "Violet" and "Maggie" mineral claims, situate to the south of Rossland, in the Trail Creek Mining Division of the District of West Kootenay, in the Province of British Columbia.

Ruby Gold Mining and Development Co., Ltd.—Capital, $400,000. Shares $1.00 each. Trustees: R. Sparling, G. G. Henderson, D. C. Underwood. Head Office: Vernon, B.C.

Sadie Gold Mining Co., Ltd.— Capital, $1,000,000. Shares $1.00 each. Trustees: Jas. T. Mackenzie, John N. Lee, Gordon Hunter. Formed to purchase the "Sadie" mineral claim, situate in the District of West Kootenay, in the Province of British Columbia.

Salisbury Gold Mining Co.— Incorporated 1892. Authorized Capital, $50,000. Directors: P. L. Price, F. W. Borden, M. P., Barclay Webster. Head Office: P. L. Price, Secretary, Kentville, N. S. Formed to acquire and work a property containing fifty gold areas, in the Montagu District, County of Halifax, Province of Nova Scotia.

Salmo Consolidated Gold Mining and Development Co., Ltd.— Capital, $1,500,000. Shares $1.00 each. Trustees: V. P. Wiesenthal, Chas. Dempster, Geo. C. Rose. Head Office: Rossland, B. C. Formed to purchase the "White Cloud," "Blue Jack," "Yellow Jack," and "Sitting Bull" mineral claims, situate in the Nelson Mining Division of West Kootenay District, Province of British Columbia.

Salmon River Gold Mining Co., Ltd.—Capital, $1,500,000. Shares $1.00 each. Trustees: A. E. Lyford, R. M. Higgs, E. Griset. Head Office: Rossland, B. C. Formed to purchase the mineral claims "Dinner Pail," "Bulla," "Jennings Fraction," "Genevieve," "Iron Over All," "Iron Duke" and "Long Green," situate in the Nelson Mining Division, on the North Fork of the Salmon River, in the District of West Kootenay, British Columbia.

Salmon River Valley Mining Co., Ltd.— Capital, $1,000,000. Shares $1.00 each. Trustees: Fred Kaiser, A. Modigh, J. B. Stover, Lucius Miley. Head Office: Rossland, B. C. Formed to purchase the "Guttenberg" mineral claim, situate about one mile east of the Nelson and Fort Sheppard Railway, in the Nelson Mining Division of West Kootenay District, British Columbia.

Samson Gold Mining Co., Ltd.—Capital, $1,000,0000. Shares $1.00 each. Trustees: F. W. Pretty, A. Martin, J. C. Campbell, Wm. Brown, Wm. Harp. Head Office: Rossland, B. C. Formed to purchase the "Samson," the "Head Light," and the "New Deal" mineral claims, situated in the Kettle River Mining Division of the District of Yale, in the Province of British Columbia.

San Francisco Gold Mining Co., Ltd.—Incorporated 1896. Capital, $1,000,000, divided into 1,000,000 shares of a value of $1.00 each. Directors: W. W. Dines, Rossland; Joseph Harris, John Dick, Winnipeg, Man.; J. B. McArthur, C. O'Brien Reddin, Rossland, B.C. Formed to acquire the "San Francisco" mineral claim, situate in the Trail Creek camp, West Kootenay, B.C.

San Joaquin Gold Mining Co.—Incorporated 1896. Authorized capital, $1,000,000. Directors: Hon. E. Dewdney, D. W. Higgins, and A. J. McLellan. Head Office: Victoria. Formed to acquire the San Joaquin mineral claim, West Kootenay, B.C.

Santa Clara Gold Mining Co. (Foreign).—Capital, $1,200,000. Shares $1.00 each. Head Office: Spokane, Wash.

Sarah Lee Gold Mining Co., Ltd.—Capital, $1.000,000. Shares $1.00 each. Trustees: Thos. Anderson, Thomas Corsan, C. I. Campbell. Head Office: Rossland, B.C. Formed to purchase the "Sarah Lee" mineral claim, situate to the south-east of the Townsite of Rossland, in the Trail Creek Mining Division of the District of West Kootenay, in the Province of British Columbia.

Security Gold Mining and Development Co. of Ontario, Ltd.— Capital $1,500,000. Shares $1.00 each. Directors: Saml. C. Wood, Jas. C. Aikens, Geo. S. Ryerson, Wm. H. B. Aikens, Thos. R. Clougher, Mercer J. Adams, Thomas Long, Wm. H. Boome, Jos. Hartich, Walter J. Doughty. Head Office: Toronto, Ont.

Seine River, Manitou, Gold Mining and Development Co., Ltd.—Capital $2,000,000. Shares $1.00 each. Directors: J. A. Lowell, E. B. Jewett, E. T. Ransom, John E. Devereux, F. Le Blond, Jas. Bampfield, Alex. Logan, Jas. Barry, Wm. L. Doran. Head Office: Niagara Falls, Ont.

Shakespeare Gold Mining Co., Ltd.—Capital $1,000,000. Shares $1.00 each. Trustees: Jno. Cawthorn, H. Marymont, P. G. Nash. Head Office: Rossland, B.C.

Shamrock Gold Mining Co., Ltd.—Capital $250,000. Shares 25 cents each. Trustees: A. A. Davidson, W. H. Brooks, C. N. Davidson. Head Office: Victoria, B.C. Formed to purchase the Shamrock mineral claim, situate in Fairview Camp, in the Osoyoos Division of Yale District, British Columbia.

Shandon Bell Gold Mining and Development Co., Ltd.— Capital $150,000. Shares 10 cents each. Trustees: Thos. Parker, Alex. C. Galt, Ernest W. Lilgegrau, Fritz W. Bauer. Head Office: Rossland, B.C. Formed to purchase the "Shandon Bell" and "Bon Accord" mineral claims, situate on Sullivan Creek, in the Trail Creek Mining Division of West Kootenay, B.C.

Shebandowan Gold Mining and Development Co., Ltd.—Capital, $1,000,000. Shares $1.00 each. Directors: Jas. C. Hegler, Wm. Ewart, Hugo V. Altshul, C. C. L. Wilson, Jno. A. Richardson, F. J. Howell, Peter D. Carse, R. D. McDonald, Thos. B. Wren, O. E. Robinson, John M. Rogers. Head Office: Ingersoll, Ont. Formed to purchase and acquire Mining Location Block "O," No. 1, Lake Shebandowan, in the District of Thunder Bay, Ont.

Shoal Lake and Seine River Mining Co., Ltd.—Capital, $600,000. Shares $1.00 each. Directors: John C. Hunter, Angus R. MacFarlane, R. M. Hunter, James C. Hunter, Arthur H. Crassweller. Head Office: Seine City, Ont.

Silver Belle Mining Co., Ltd.—Capital, $1,000,000, divided into 1,000,000 shares of a value of $1.00 each. Directors: Geo. A. Pounder, Rossland; J. J. Henager, Rossland; Milton O. Tibbits, Rossland. Head Office: Rossland, B.C.

Silver Bow Quartz Mining Co., Ltd.—Capital, $1,000,000. Shares $1.00 each. Directors: Augustus A. Davidson, William A. Dier, Cicero N. Davidson. Head Office: Victoria, B.C. Formed to acquire the mineral claim known as the "Silver Bow," in Fairview Camp, in the Osoyoos Division of Yale District, B.C.

Silver Crown Consolidated Mining Co. (Foreign.)—Capital $1,000,000. Shares $1.00 each. Head Office: Spokane, Wash.

Silverine Gold Mining Co.—Incorporated 1896. Capital, $500,000, in shares of $1.00 each. Head Office: H. C. Macdonald, Sec.-Treas., Spokane, Wash. Mines Office: Rossland, B.C. Directors: Austin Corbin, Jacob Hoover, Chas. Sweeney, W. H. Taylor, S. S. Bailey, F. P. Hogan, W. J. C. Wakefield, John S. Baker. Formed to acquire and work the Silverine mining claim on Monte Cristo Mountain, Trail District, B.C.

Silver King Gold Mining Co.—Capital $750,000, divided into 750,000 shares of a value of $1.00 each. Head Office: Spokane, Wash.

Silver Queen Mining Co., Ltd.—Capital, $1,250,000. Shares $1.00 each. Trustees: E. C. Finch, C. C. Woodhouse, Jr., J. L. Whitney. Head Office: Rossland, B. C.

Silver Star Gold Mining Co., Ltd.—Capital, $400,000, Shares $1.00 each. Trustees: Cornelius O'Keefe, Albert G. Fuller, Alex. J. McMullen. Head Office: Vernon, B. C.

Simcoe Mining and Developing Co., Ltd.—Capital, $1,000,000. Shares $1.00 each. Trustees: Wm. Wilson, Chas. J. Wilson, Jas. M. Patterson, Wm. J. Wilson. Head Office: Nelson, B. C.

Skeena River Mining Co., Ltd.—Capital, $100,000. Shares $1.00 each. Trustees: Robt. P. Rithet, Jno. H. Turner, John Irving, A. K. Munro, Chas. W. D. Clifford. Head Office: Victoria, B. C. Formed to purchase the "Emma Mine," the "I. X. L.," and the "Kendall Group" mineral claims, all situated near Kitselass Canyon, Skeena River, British Columbia, and respectively recorded as No. 269, No. 311, and No. 115, in the office of W. S. Gore, Gold Commissioner, at Victoria.

Slocan and Fort Steele Gold Mining Co., Ltd.—Capital, $1,000,000. Shares $1.00 each. Trustees: W. B. McGerry, R. G. Henderson, D. Sutherland, J. H. Woolery, T. Montgomery. Head Office: Slocan, B. C. Formed to purchase or otherwise acquire mineral claims situate in the Slocan Mining Division in West Kootenay District, and in the Fort Steele Mining Division, East Kootenay District, B. C.

Smuggler Gold Mining and Milling Co., Ltd. — Capital, $1,000,000. Shares $1.00 each. Directors: Herbert H. Dewart, John T. Gilmour, Geo. H. Maurer, Alexander Dixon, William H. Boorne, Albert W. Atwater, Rueben C. Tasker. Formed to acquire certain mineral lands, leases, licenses and rights over mineral lands in the property situate in the Osoyoos Division of Yale District, in the Province of British Columbia, being Lot 582 in Group 1, and known as the "Smuggler" mineral claim; and especially to enter into a certain agreement in that behalf between William Hanson Boorne, George Hugo Maurer, and Alexander Dixon, of the one part, and The Smuggler Gold Mining and Milling Company (Limited), of the other part.

Sophia Mountain Gold Mining Co., Ltd.—Capital, $1,000,000. Shares $1.00 each. Trustees: Alex. Miller, J. M. O'Toole, A. S. Goodeve, W. J. Herald, S. L. Graham. Head Office: Rossland, B. C.

Sovereign Gold Mining and Development Corporation of Ontario, Ltd.—Capital, $2,500,000. Shares $1.00 each. Directors: Alfred E. Jones, John S. Dignam, Henry Jones. Head Office: Toronto, Ont.

Sovereign Mining Co., Ltd.—Capital, $1,000,000. Directors: Charles W. Clark, Henry Byrnes, Donald R. Dingwall, William D. Pettigrew, John R. Hovey, Albert N. McCutcheon, Robert H. Nunn. Head Office: Rat Portage, Ont.

Standard Gold Mining Co., Ltd.—Capital, $1,000,000, divided into 1,000,000 shares of a value of $1.00 each. Directors: F. S. Timberlake, H. Heffering and S. I. Timberlake, all of the Vancouver, and F. R. Blochberger, Portland, Oregon.

Starmount Gold Mining Co., Ltd.—Capital, $500,000. Shares $1.00 each. Trustees: H. W. F. Pollok, P. A. Paulson, A. W. Taylor, R. B. Punnet. Head Office: Victoria, B.C. Formed to acquire the mineral claims in the West Kootenay Mining Division of the Province of British Columbia, known as the "Starmount," situate one mile east of Silverton, and the "Deadwood Pet," situate on the Galena Farm, about one and a half miles east of the Currie mine.

St. Lawrence Gold Mining Co., Ltd.—Capital, $1,000,000. Shares $1.00 each. Trustees: Louis J. McAtee, Ernest Kennedy, Frank W. Rolt. Head Office: Rossland, B. C. Formed to acquire the mineral claim known as "Gold King," adjoining the "I. X. L." mineral claim, in the Trail Creek Mining Division of West Kootenay District, British Columbia.

St. Mary Mining Co., Ltd.—Registeued 11th May, 1896. Head Office: Spokane. Authorized capital, $500,000. Formed to carry on mining in British Columbia.

Sudbury Gold Mining Co., Ltd.—Capital, $100,000. Shares $1.00 each. Directors: Wm. A. Quibell, Robert H. Arthur, Wm. P. Martin, Duncan C. Fraser, Donald McGregor. Head Office: Sudbury, Ont.

Sudbury Gold Mining Co., Ltd.—Formed to carry on mining operations in the Districts of Nipissing and Algoma, in the Province of Ontario. Directors: H. N. Kitson, H. C. Beckett, F. C. Bruce, G. C. Newburn, all of Hamilton, Ont.; H.A. Wiley, G. T. Marks and S. F. Wiley, Port Arthur, and H. C. McDean, Toronto.

Sultana Gold Mining Co. of British Columbia, Ltd.—Capital, $1,000,000. Shares $1.00 each. Trustees: Wm. J. Nelson, John S. Clute, Jr., Edward Bowers, Chas. S. Warren-Howland, V. N. Stevenson. Head Office: Rossland, B.C. Formed to purchase the "Sultana" Mineral claim, situate on Look-out Mountain, in the Trail Creek Mining Division, in the District of West Kootenay, in the Province of British Columbia.

Sunset Gold and Silver Mining Co.—Capital, $250,000. Shares $1.00 each. Head Office: Minneapolis, Minn.

Sweden Gold Mining Co. of Ontario, Ltd.—Capital, $500,000. Shares $1.00. Directors: Thomas H. Fahey, Thomas Black, A. Buehler, Josiah T. Roberts, Joseph A. Herman. Head Office: Rat Portage, Ont.

Texada Island Mining and Land Co., Ltd. — Incorporated 1896. Capital, $80,000, divided into 8,000 shares of $10.00 each. Directors: J. W. Stirtan, Thos. D. Jones, Thos. Morgan, Alfred Raper, Elijah Priest, Wm. E. Webb, David Jones, J. H. Pleace, all of Nanaimo, B. C. Head Office: Nanaimo, B. C.

Texada Kirk Lake Gold Mines, Ltd.—Capital, $600,000. Shares $1.00 each. Trustees: Frank W. McCrady, Thomas G. Challoner, John W. Spring. Head Office: Victoria, B. C. Formed to acquire the "Victoria," "Climax" and "Texada" mineral claims, situate on Texada Island, in the Province of British Columbia.

Texada Silver King Gold Mining Co., Ltd.—Capital, $100,000. Shares 10 cents each. Trustees: Angus R. Johnston, Chas. E. Clarke, Dennis R. Harris, Head Office: Victoria, B. C. Formed to purchase the "Silver King" mineral claim, situated on Texada Island, in the Province of British Columbia.

Thessalon Gold Mining Co., Ltd.—Capital, $800,000. Shares $1.00 each. Directors: Nathaniel Dyment, David Gordon, Albert E. Dyment, James S. Dobie, John Knight. Head Office: Thessalon, Ont.

Tidal Wave Mining Co., Ltd.—Captain, $1,000,000. Shares $1.00 each. Trustees: Chas. Wilson, Chas. J. Loewen, J. M. Buxton. Head Office: Vancouver, B. C. Formed to acquire four mineral claims, consisting of the "Tidal Wave," the "Osian Wave," the "Contact," and the "Vernon," all situated in Skylark Camp, in the Kettle River Mining Division of Yale District, in the Province of British Columbia.

Tin Horn Quartz Mining Co., Ltd.—Capital, $200,000. Shares 25 cents each. Trustees: Augustus A. Davidson, William A. Dier, Cicero N. Davidson. Head Office: Victoria, B. C. Formed to acquire the "Tin Horn," in Fairview Camp, in the Osoyoos Division of Yale District, British Columbia.

Toronto and Boundary Creek Mining Co., Ltd.—Capital, $1,000,000. Shares $1.00 each. Trustees: Jas. Jermyn, Thos. A. Garland, C. R. Garland. Head Office: Greenwood City, B. C.

Toronto Salmon River Gold Mining Co., Ltd.—Capital, $1,000,000. Shares $1.00 each. Trustees: J. Gore, G. Owens. Percy Routh. Head Office;

Rossland, B.C. Formed to purchase the "Toronto," "Nil Desperandum" and "Drill" mineral claims, situate about seven miles south-west of Salmon Siding, in Nelson Mining Division of West Kootenay District, in the Province of British Columbia.

Toronto Saw Bill Gold Mining Co., Ltd.—Capital, $500,000. Shares $1.00 each. Directors: Chas. A. Martin, Jos. E. Mathe, Geo. H. Watson. Head Office: Toronto, Ont.

Townsend Mining Co., Ltd.—Capital, $200,000. Shares $1.00 each. Trustees: F. Granville, L. Doucet, Jno. J. Banfield. Head Office: Vancouver, B.C. Formed to purchase the "Townsend" mineral claim, situate in the Slocan District of West Kootenay, British Columbia.

Trail and Slocan Development Co., Ltd.—Capital, $1,000,000. Shares 10 cents each. Trustees: Geo. Gurd, Jas. T. McKenzie, Smith Curtis. Head Office: Rossland, B.C.

Trail-Bear Creek Gold Mining Co., Ltd.—Capital, $1,000,000. Shares $1.00 each. Trustees, Geo. A. Brooke, E. L. Clark, Chas. L. Askew. Head Office: Rossland, B.C.

Trail Creek Hidden Treasure Gold Mining Co., Ltd.—Capital $1,000,000. Shares $1.00 each. Trustees: Geo. H. Green, W. H. Young, F. M. Davis, J. C. Campbell, Chas. Frey. Head Office: Rossland, B.C. Formed to purchase the Hidden Treasure, Stella, and Eclipse Mineral Claims, all situate in the Trail Creek Mining Division of West Kootenay, in the Province of British Columbia.

Tranquille Creek Hydraulic and Quartz Mining Co., Ltd.—Capital, $250,000. Shares $10 each. Trustees: James Nair, Jas. H. Russell, M. J. McIver. Head Office: Kamloops, B.C. Formed to purchase the rights and interests of Jame H. Russell in a certain hydraulic mining lease of mining ground situate on Tranquille Creek, in the Province of British Columbia.

Trenton Gold Mining Co.—Capital, $750,000. Shares $1.00 each. Head Office: Spokane, Wash.

Troy Gold Mining Co., Ltd.—Capital, $100,000. Shares 5 cents each. Trustees: Wm. B. Dennison, Frank B. Gibbs, Robt. T. Williams, Thos. Bradbury, Henry T. Stannard. Head Office: Victoria, B.C. Formed to acquire the mineral claims known as the "Nanaimo Enterprise," situate on the east side of Union Hill, and the "Homestretch," situate on the north-east slope of the Monte Cristo Mountain, both in the Trail Creek Mining Division of Kootenay District, in the Province of British Columbia.

Tulameen Hydraulic and Improvement Co., Ltd.—Incorporated 1891. Authorized Capital, $60,000. Directors: R. G. Tatlow, Vancouver, B.C.; Alexander Ewen, New Westminster, B.C.; J. C. Armstrong, New Westminster, B.C.; Hon. D. McInnes, Victoria, B.C.; Benjamin Douglas, New Westminster, B.C. Head Office: Walter J. Walker, Secretary, New Westminster, B.C. Formed for the purpose of acquiring and consolidating certain leases known as the "Tulameen," the "Hines Creek" and the "Eagle Creek" claims, situate on the Tulameen River, in the Yale Division of British Columbia. The workings are distant from Kamloops station, on the line of the C.P.R., about 125 miles by waggon road and trail. The claims owned by the Company extend from Eagle Creek, a distance of two and a-half miles down the Tulameen River, and contains large benches or alluvial deposits of platinum and gold-bearing gravel.

Turtle Mountain Gold and Silver Mining and Development Co., Ltd.—Capital, $1,000,000. Shares $1.00 each. Trustees: W. H. Bell, A. McCaskill, Frank A. Baird. Head Office: Rossland, B.C.

Union Jack Mining Co., Ltd.—Capital, $800,000. Shares $1.00 each. Trustees: E. C. Finch, C. C. Woodhouse, Jr., J. L. Whitney. Head Office: Rossland, B.C.

Uphaz Gold Mining and Development Co. of Ontario, Ltd.— Capital, $1,000,000. Shares $1.00 each. Directors: Wm. M. McLeod, Thos. P. McIntyre, J. T. Robarts, Jas. Gibson, John H. Conklin. Head Office: Rat Portage, Ont.

Van Anda Copper and Gold Co.—Registered 6th May, 1896. Authorized Capital, $5,000,000. Head Office: Seattle, Wash. To carry on mining in British Columbia.

Vancouver and Lillooet Gold Mining Co., Ltd.—Capital, $300,000. Shares 25 cents each. Trustees: J. W. Campion, W. L. Nicol, A. A. Jones, S. J. Tunstall, C. C. Bennet. Head Office: Vancouver, B.C. Formed to acquire the mineral claim "Victoria," in the District of Lillooet, in the Province of British Columbia.

Vancouver Gold Fields, Ltd.—Capital, $500,000. Shares $1.00 each. Trustees: Geo. L. Milne, James J. Johnston, Robert B. Ellis, Robert W. Harris. Head Office: Vancouver, B.C.

Vancouver Group Mining Co., Ltd.—Capital, £20,000. Shares £1 each. Trustees: Edward Mahon, Jos. W. McFarland, Leslie Hill. Head Office: Vancouver, B.C.

Vancouver Meteor Mining Co., Ltd.—Capital, $500,000. Shares $1.00 each. Trustees: J. M. Mackinnon, J. R. Seymour, P. N. Thompson. Head Office: Vancouver, B.C. Formed to acquire the mineral claims "Meteor" and "Vancouver," in the Ainsworth Mining Division of West Kootenay, in the Province of British Columbia.

Victoria Mining Co., Ltd.—Capital, $500,000, divided into 500,000 shares of a value of $1.00 each. Directors: C. S. Botsford, J. A. Meldrum, Thos. D. Law, A. Mackenzie, and Jas. S. Powell, all of Toronto. Formed to carry on mining operations in the Districts of Algoma, Parry Sound, Thunder Bay and Rainy River, Province of Ontario.

Victory-Triumph Gold Mining Co., Ltd.—Capital, $1,000,000. Shares $1.00 each. Trustees: Jefferson Lewis, Olans Jeldness, David B. Bogle, Alexander R. Macdonald. Head Office: Rossland, B.C.

Wabigoon Free Milling Gold Mining Co., Ont., Ltd.—Capital, $1,000,000. Shares $1.00 each. Directors: Robert T. Johnson, C. C. Robinson, W. T. Stuart, Archibald Mills, W. H. Wallbridge, B. Lawrence. Head Office: Toronto, Ont.

Wabigoon Gold Mining Co. of Ontario, Ltd.—Capital, $1,000,000. Shares, $1.00 each. Directors: Robert L. Patterson, Arthur J. Jackson, Geo. Drewry, James M. Savage, Geo. Girard, Jno. W. Colcleugh. Head Office: Rat Portage, Ont.

Warrington Mining and Developing Co., Ltd.—Capital, $1,000,000. Shares $1.00 each. Trustees: Chris. F. Foreman, Wm. Hunt, Wm. H. Gallagher. Head Office: Vancouver, B.C. Formed to purchase the "Guelph" mineral claim, situated on Harrison Lake, in the New Westminster District, in the Province of British Columbia.

Wellington Square Gold Mining and Smelting Co., Ltd.—Capital, $2,000,000. Shares $1.00 each. Trustees: Robert Clark, Ella Clark, Isaac A. Dinsmore, A. C. Sutton. Head Office: Grand Forks, B.C. Formed to purchase the "Snow Bird," the "Wellington Square," the "Silver Knot," and the "Mayflower" mineral claims, situate in the Seattle Camp, on the North Fork of Kettle River, in the Kettle River Mining Division of Yale District, in the Province of British Columbia.

Western Algoma Gold Mining Co. of Wabigoon, Ltd.—Capital, $1,000,000. Shares $1.00 each. Directors: S. S. Ryckman, Geo. Aske, Wm. Cowan, Thomas McNea, Jas. McDougall, John S. McKellar. Head Office: Wabigoon, Ont.

Western Canada Gold Mines Co., Ltd.—Capital, $99,000. Shares $100 each. Directors: Frederick Wylde, John Flett, A. A. Allan, Jas. Carruthers, James K. Kerr. Head Office: Toronto, Ont.

Western Canada Mining Co. of Rat Portage, Ltd.—Capital, $750,000. Shares $1.00 each. Directors: Richard V. Jamieson, Robt. H. Auger, James E. Steen, John Plaxton, Robert H. Beck, Henry S. Crotty, H. G. Wilson. Head Office: Rat Portage, Ont.

Western Ontario and Manitoba Gold Mining and Development Co., Ltd.—Capital, $750,000. Shares $1.00 each. Directors: John F. Howard, John Dick, Andrew Kelly, E. J. Grain, Donald H. McDonald, Thos. H. Gilmour.

Western Ontario Mining Co., Ltd.—Capital, $1,000,000. Shares $1.00 each. Directors: Morison Kyle, Charles S. Morris, Gustavus A. Kobold, John W. Humble, Henry Langford. Head Office: Rat Portage, Ont.

West Saw Bill Mining Co. of Ontario, Ltd.—Capital, $1,000,000. Shares $1.00 each. Directors: B. W. Folger, Jas. Hammond, Walter Macdonald, Wm. H. Garvey, Robt. K. Sproule. Head Office: Toronto, Ont.

White Bear Gold Mining and Milling Co.—Capital, $2,000,000. Shares $1.00 each Head Office: Shares $1.00 each. Head Office: Spokone, Wash., U.S.A.

White Bird Gold Mining Co.—Capital, $1,000,000. Shares $1.00 each. Trustees: C. A. Baldwin, S. C. Chezum, Jno. Jackson, Jr. Head Office: Rossland, B.C. Formed to purchase the "White Bird" mineral claim, situate in the Trail Creek Mining Division, in the District of West Kootenay, British Columbia.

White Pine Mining Co., Ltd.—Capital, $1,000,000. Shares $1.00 each. Trustees: Thos. J. Trapp, F. W. Pretty, H. F. Clinton. Head Office: New Westminster, B.C. Formed to purchase from F. W. Pretty and F. McFarlane, the "White Pine" and "Yakima" mineral claims, situate in Trail Creek Mining Division of West Kootenay, distant respectively one-half mile and three-quarters of a mile north of the Pend O'Oreille River, and one mile from Waneta, Province of British Columbia.

Wild Horse Gold Mining Co., Ltd.—Capital, $2,000,000. Shares $1.00 each. Trustees: Joseph B. Dabney, Jno. L. Parker, W. A. Galliher. Head Office: Rossland, B.C. Formed to purchase certain mineral claims known as the "Molly F.," "Nebraska Girl," and "Big Two," lying between Wild Horse and Porcupine Creeks; the "M.E.F.," one and one-half miles south-west of Quartz Creek, and the "Louie Allan," lying close to the North Fork of Wild Horse Creek, all in the Nelson Mining Division of the West Kootenay District of British Columbia.

Winchester Gold Mines Co. of Fairview, B.C., Ltd.—Capital, $250,000. Shares 25 cents each. Trustees: A. A. Davidson, Wm. A. Dier, A. G. McCandlass, C. N. Davidson. Head Office: Victoria, B.C. Formed to purchase or otherwise acquire the "Winchester" mineral claim, situate in Fairview, camp, in the Osoyoos Division of Yale District, from the present owners thereof, and to pay for the same either in money or fully paid up shares of the Company, or partly in money and partly in such shares, and to prospect, work, explore, develop, and turn to account the said mineral claim.

Winnipeg and Eureke Mining Co., Ltd.—Capital. $1,000,000. Shares, $1.00 each. Trustees: Wm. A. Swan, J. Hillyard Leech, John Russell, John Thomson, John B. Ferguson. Head Office: Rossland, B.C. Formed to purchase the "Eureka," "Tenderfoot," "Treasury," and "Shamrock" mineral claims, situate on Cariboo Creek, in Slocan Mining Division and West Kootenay District, B.C.

Wisconsin Gold Mining Co. (Foreign.)—Capital, $1,000,000. Shares $1.00 each. Head Office: Spokane, Wash.

Wolverine Gold Mining Co.—Incorporated 1896. Authorized Capital, $500,000. Directors: E. S. Topping, L. C. Crawford, Joseph C. Bishop, and Ralph White. Head Office: Trail, B.C.

Yale Gold-Copper Mining Co., Ltd.—Incorporated 1896. Capital, $1,000,000, divided into 1,000,000 shares of a value of $1.00 each. Directors: T. C. Gray, Rossland; George Talbot, Rossland; Eli Terzick, Rossland. Chief place of business: Rossland, B.C. Objects: To purchase the "Yale" mineral claims, situated in the Trail Creek Mining Division, in the West Kootenay District, B.C., and any other mlneral claims in the said camp, or elsewhere, in the Province of British Columbia.

Yale Homestake Gold and Silver Mining Co., Ltd.—Capital, $400,000. Shares 25 cents each. Trustees: Frederick C. Innes, Stephen O. Richards, Edward P. Davis. Head Office: Vancouver, B.C. Formed to acquire the mineral claims known as the "Homestake," "Troublesome," "Maple Leaf," "Argentum," "Lytton," "Eureka," and "Baryta," situate in the District of Yale, in the Province of British Columbia.

Yellow Jacket Gold Mining Co. of Seine River, Ltd.—Capital, $300,000. Shares $1.00 each. Directors: William Croft, John A. McKee, Jas. Goodall, L. K. Cameron, C. J. H. Eckardt, Rev. John Hunt, John W. Lester, L. R. Clarke, S. J. Sharpe, Geo. L. Lennox, Robt. Palen, M. T. Lester, Jno. Croft, Geo. K. Dunstan. Formed to acquire mining locations 773 P, 241 E and 242 E, Seine River District, Ontario.

Yellowstone Gold Mining Co.—Capital, $1,000,000. Shares $1.00 each. Head Office: Spokane, Wash.

Young British American Gold Mining Co.—Head Office: Rossland, B.C. Authorized capital, $10,000,000. Directors: Howard C. Walters, R. C. Pollett and Jos. H. Adams. To carry on mining in British Columbia.

Yum-Yum Gold Mining Co. of Ottawa, Ltd.—Capital, $1,000,000. Shares $1.00 each. Directors: John Mather, Chas. Magee, Edward Seybold. Head Office: Ottawa, Ont.

Zenda Gold and Copper Mining Co.—Capital, $1,500,000. Shares $1.00 each. Head Office: Spokane, Wash.

Zilor Gold Mining Co., Ltd.—Capital, $1,000,000. Shares $1.00 each. Trustees: Thos. P. Gower, Howland Stevenson, J. B. Ferguson, J. B. McArthur, H. A. Cousins. Head Office: T. P. Gower, *Secretary*, Rossland, B.C. Formed to acquire the "Zilor" Mineral Claim, situate about two miles south of Rossland, in Trail Creek Mining Division of West Kootenay District, British Columbia, or any part of the same, and to pay for the same either in cash or fully paid up stock of the company or corporation.

SILVER AND LEAD.

The production of these metals in Canada is practically confined at present to the West Kootenay District of British Columbia, the total output of silver up to end of 1896 being valued at $4,028,224, and of lead, $1,606,427. During 1896 the production of silver in this province was increased to $3,135,343 ozs. of a value of $2,100,689, as against 1,496,522 ozs. of a value of $977,229 in 1895. The output of lead was of a value of $721,384, as against $532,255 in 1895.

The productive life of the Kootenay extends only over the past six years, and of this short time a great deal has been under great disadvantages for want of transportation facilities, and the ore might be left untouched to-day if it had not been rich enough to pay the expense of packing great distances over rough roads.

Railroads will come into a district after it has demonstrated, by its shipments packed on animals' backs, that the ore is there, and of a paying quality. Their extension has been rapid, but the needs of mining camps increase with equal or greater rapidity, with the result that many districts, which will ultimately eclipse the present producers, have to wait, since the ores, although of large body, will not pay for such costly transportation as is necessary, amounting in many places to from $10 to $50 per ton before reaching cars.

The two great districts of East and West Kootenay are further subdivided into recording divisions, each division having a more or less central point at which a Government office is established. Through the medium of these offices nearly all the transactions relative to mining properties have to pass.

In order to understand more definitely what is being done in the silver mining districts, these divisions may be taken separately, and the peculiarities and state of development of each one be noted—that is, in the case of the more important producing divisions. East Kootenay, as a silver mining district, may be taken as a whole, considering the state of its present development.

Of the divisions of West Kootenay, the four leading silver producers are Slocan, Ainsworth, Nelson and Kaslo. Trout Lake mining division, Illicillewaet, Lardeau and Caribou Creek are coming producers, and are actively developing their prospects and building trails and roads.

East Kootenay District.

This district was first explored for minerals as a placer camp, as is usual with most camps which ultimately turn to quartz mining or solid rock work.

After the placer camps at Galbraith's Ferry, in 1864, little was done until Major Steele came in from the Northwest in 1887 and established Fort Steele.

Since that time many large deposits of argentiferous galena have been located, more especially in that portion west of the Columbia, which is drained by the St. Mary's and Moyie rivers. Chief amongst these are the North Star, 20 miles north-west of Fort Steele, and Sullivan groups; also the St. Eugenie, on Moyie Lake, and the Dibblo group in the Rocky Mountains. Of these ore bodies, the North Star is at present the only active producer.

This mine has been making an output of about 30 tons of picked galena per day during the past season. This ore is taken overland to the Columbia River, by sleighs or waggons, and from thence goes down the Kootenay River to Jennings, Montana, at which point the ore is shipped via the Great Northern Railway. Other mines have made sample shipments, but apparently at the present time the ore bodies cannot bear this high transportation charge.

A waggon road connects Fort Steele and Golden on the C. P. R., a distance of 160 miles, also a more or less effective water route via the upper Columbia River.

With points on the Great Northern there are fair transportation facilities down the Kootenay River, boats being run up and down by the Upper Kootenay Navigation Company, which has a contract to bring down 5,000 tons of North Star ore to Jennings, Montana.

This district is composed of five divisions, in which more or less development is going on, principally, however, in gold quartz and placer mining, with the exception of Fort Steele division, which promises more for a silver-lead camp. The chief silver bearing minerals of this district are, as usual, galena and copper combinations. The galena is in large bodies, but of somewhat lower grade than that of many West Kootenay camps.

It may be seen on a map of this district that the St. Mary's River, Perry Creek and Moyie River country stretches westward across the Purcell range, and finally meets the ore-bearing region draining down into Kootenay Lake, including the White Grouse Mountains, which are now attracting considerable attention.

When the much hoped for Crow's Nest Railroad comes through, East Kootenay will be one of the earliest and most benefitted regions. It has abundance of coking coal within easy distance, together with iron and limestone suitable for fluxes. Then, like many another waiting camp, it will no doubt outshine the present chief producers.

West Kootenay.

Under the head division of Revelstoke there are in the north part of West Kootenay the sub-division Illicillewaet, Lardeau and Trout Lake, all of which have valuable deposits of more or less low-grade silver ores, together with some smaller bodies of exceedingly high-grade combinations. In the Illicillewaet and Lardeau only the ordinary development of non-shipping camps has gone on during the past year, together with some important transfers.

Trout Lake Mining Division.

This is also a camp which owes its origin to placer mining, a little of which is still carried on in winter. Trout Lake is situated 12 miles east of the north-east arm

of the Upper Arrow Lake, and is reached by a good waggon road which crosses the summit through a low, wide pass, less than 1,000 feet above Upper Arrow Lake, and four miles west of Trout Lake ; from this point the drainage is eastward, and thence south down the Lardeau River to the Duncan River and Kootenay Lake.

The low pass will probably be one way for all-rail communication from Revelstoke to Kootenay Lake, as suggested by Dr. Dawson in his report upon this district in 1889. At present, however, the means of transportation are expensive, as may be judged from shipments of the "Silver Cup" during last winter, the only shipments of any account from this division. The ore from this mine was "raw-hided" over the range to Trout Lake, from there by open boat to the waggon road, thence 12 miles by sleighs to Thomspon's Landing on the north-east arm of Arrow Lake ; again by boat to the C. P. R. at Arrowhead.

Such shipments as these are expensive, but they are the means of making a producing camp, and carry more weight than much newspaper "booming."

In this division, upon the mountains of the low divide, there are great bodies of low-grade argentiferous galena ; and further northward still, along the contact of a great band of crystalline limestone and the prevailing schists, their are combinations of galena, zinc blende and grey copper, which carry from 200 ozs. to 2,000 ozs. silver per ton.

These richer locations are too much out of the way for present shipping, although good pack rails have been built and a waggon road is now in progress. This particular district seems to have a greater fall of snow and rain than other portions of West Kootenay, and many of the locations are among snow slides for a considerable portion of the year, especially those about the head waters of the Duncan and Lardeau rivers.

This division claims some of the largest bodies of galena in West Kootenay, but these must lie idle until further railroad development takes place.

In connection with the very apparent influence of country rock upon mineral combinations in this district, it may be of interest to note that this portion of the country is overlain by great bands of of stratified rock, singularly regular in strike and dip, considering the broken state of the ranges further southward.

These rocks are chiefly composed of fine mica schists, more or less calcareous, and chloritic schists and massive limestone, with serpentine in places. The strike is north-westerly. A chart of this country showing the mining claims at once indicates a conformation of the principal veins with the banding of the rock, such a strong conformation that groups of a score of claims are located in one long line. This is especially true of the contact of the massive limestone and schists. This division has had a considerable number of bonds and sales during the past year.

Ainsworth Division.

This is the oldest camp of West Kootenay, and was the first producer of ore, locations having been made in 1883. Previous to this the great deposit of ore now being worked for the Pilot Bay smelter was known and acquired but not worked. It was from this camp that the stampede for the Slocan to the north-westward took place in the fall of 1891.

Good transportation is afforded by means of Kootenay Lake, and the presence of the Pilot Bay smelter, just across the lake, has greatly stimulated development and production during the past 18 months. The ores, excepting some large bodies of low grade galena, zinc blende and pyrites, such as the Blue Bell and the Canadian Pacific Mining Co's mine at Woodberry, are chiefly dry ores, composed mainly of argentite, copper combinations, and argentiferous iron pyrites, together with some native silver and ruby silver.

These dry ores are a few miles back from the lake in metamorphic rocks close to the contact of the great granite area which lies to the west of Kootenay Lake. They appear under much the same conditions and combinations as in other contact zones, such as are in the Slocan.

Waggon roads lead up from the lake to the mines, of which there are about ten which have made shipments, the chief of which are the "Skyline" and "No. 1."

At present the production is steadily increasing. During 1895, 3,533 tons were shipped, of which most was treated at the Pilot Bay smelter.

This smelter, pending a transfer, has during the past season, since May, been shut down and shipments are being made to Everett and other American smelters.

Concentrators are run in connection with the "Blue Bell" mine, and one of 50 tons capacity at the "No. 1" mine.

The Canadian Pacific Mining and Milling Co., on Woodberry Creek, has put in a flume and will build a concentrator for their ores.

The pay streaks of the dry ore camp are often pockety, as is also the case with the Slocan dry ores. The mineral belt does not appear to be of very great extent, being practically confined to within six or seven miles of the lake. Prospectors during the present season have pretty well run over all the ground between this camp and the dry ore camps east of Slocan Lake, without finding very much ore so far, although the granites further westward, six or seven miles east of Slocan Lake, have exceedingly rich deposits of dry ore.

A new camp has been opened lately up some 15 miles eastward of Kootenay Lake. This is the White Grouse country which drains into the St. Mary's River of East Kootenay, and also westwards by Granite Creek into Kootenay Lake, 20 mile south of Pilot Bay. A Montana company has bonded eleven claims in this country and are pushing development, chief of which is the "Storm King," and are also building a 15-mile waggon road from the new town called Sanca at the mouth of Granite Creek. The ores carry a good deal of copper in different forms. No shipments can yet be made.

The Pilot Bay Smelter, pioneer of bullion producers in Kootenay, began operations in March, 1895, and produced in that year 3,220 tons of silver-lead bullion.

During the year there were mined, chiefly from the "Blue Bell," 52,000 tons of ore which was concentrated before being smelted.

This smelter ran almost entirely upon ores mined by the same company, custom smelting to the amount of 2,500 tons only being done. Two hundred men were employed and something like three quarters of a million dollars have been expended since the operations began in 1894.

Nelson Mining Division.

The chief silver-producing portion of this division consists of a body of isolated metamorphic rock, some three or four miles south of Nelson. It was in these rocks, which are placed by Dr. Dawson in his Report of 1889 as of the Adams Lake series, that the first great discoveries of argentiferous copper ores were made. This was in the year 1886, at a time when West Kootenay was a wilderness. Desultory work was carried on in different parts of Toad Mountain for the next seven years and some small shipments made at great cost. The work done on the "Silver King" proved both its richness and its permanence, so that a strong and capable company took hold of this mine and its adjacent claims.

After this transfer the history of silver mining in Nelson division is practically the history of the Hall Mines Company.

Having proved the extent of the ore bodies to be of sufficient greatness, the company contracted for a Hallidie wire rope tramway, and began the construction of a 100-ton capacity smelter. The tramway and smelter were both in running order by the 1st of February.

Some trouble was at first occasioned by the length of the tramway—4½ miles—and it became necessary, later on, to make a station about half way. The capacity of the tramway is 10 tons an hour, and that of the smelter was to be 100 tons a day. The nature of the ore and able management have made it possible to run through about 120 tons a day, one week's run averaging 145 tons.

The mine itself is in a great band of mineralized matter, the chief constituents of which are copper pyrites, peacock copper and gray copper—a very beautiful ore, and, judging from the price of the stock, a very productive one. It is understood that increased capacity is in contemplation for the output of the Hall mines, both for transportation of the "Silver King" mine ores, and in the smelter, for the treatment of ores needing preliminary roasting, and for custom smelting. The "Silver King" ores need no roasting.

As before said, there is but little silver production besides that of the Hall mines in this division. Considerable gold exists and has been won to some extent.

The Slocan Mining Division.

The following description of the ore and ore deposits of this district is given by Mr. W. A. Carlyle*:—

There are four distinct kinds of veins in Slocan:

1. The *argentiferous galena*, with zinc blend, and some grey copper in a gangue or matrix of quartz and spathic iron. These veins cut across the stratified rocks, and *through* the dykes of eruptive rock, where, in many cases, there is a good body of ore, and they also occur in the granite area, and with even the limited amount of prospecting, some have been traced from 3 to 4,000 feet along the strike, and one for nearly 2 miles. In the Slocan slates, it has not yet been proven, that as the vein cuts through shales, slates, limestones or quartzites, that any one of the series has been more favor-

* Report of Minister of Mines, B. C., 1896.

able to the formation of ore-bodies than another, as in the different veins it will be seen that good ore shutes may have the wall of any of these rocks mentioned. The ore has been deposited along fissures, both in the open fissure cavities, and by impregnation of the country rock, and in the cavity-filled veins can be seen the banded structure described elsewhere, or the solid, usually big-cubed galena, shows lines of foliation parallel with the walls, but it is evident that further motion has occurred along some of these vein fissures, after ore has been deposited.

Most of the veins are narrow, varying from 2 and 3 inches to 15 and 20 inches in width, with occasional widenings to 3 or 4 feet of solid ore, and even much more, as seen in the Slocan Star and the Alamo-Idaho veins. The ore shutes are not persistent horizontally, as is characteristic of nearly all veins, but ore is often continuous for several hundred feet, and where it then pinches, a thin streak of oxides is the index usually followed in the search for more ore, which seldom fails to re-appear with more or less work. The mistake is made sometimes of following along a slip-wall or crevice that may cross the vein crevice at a flat angle, and thus lead the miner astray. Besides the solid ore, some veins have associated with them 2, 3 or more feet of mixed ore, gangue and country rock, or a brecciated mass, which may be of such grade as to pay well for concentration; and already there are three concentrators, the Alamo, Slocan Star and Washington, doing very satisfactory work, and the Noble Five mill almost completed, with the erection of two, at least, contemplated this year. The product or concentrates is silver-bearing galena, but any value contained in the decomposed material that may enter the mill, will in all probability not be saved, likewise that in much of the gray copper, which apparently slimes badly and escapes.

The ore is shipped as "crude," or the solid or unaltered sulphides, or as "carbonates," *i. e.*, the decomposed ore, consisting of oxides and carbonates of iron, lead and silver, the mass having a reddish-brown color, with more or less yellow material; those carbonates with a soft, velvety feel, assaying highest in silver. All material about these veins should be carefully assayed before being relegated to the waste-dump, where good ore, unsuspected, has already been thrown, especially soft, iron-stained decomposed rock or vein matter.

While most of the veins are not wide, the richness of their ores greatly compensates, as may be seen from the lead and silver values as *per smelter returns* from a few of the mines as:

Slocan Star.....	80 to 95 ozs.	silver per ton,	70 to 75% lead.
Reco.....	83 to 730 "	"	19 to 67% "
Good-enough	167 to 507 "	"	15 to 67% "
Noble Five.....	62 to 543 "	"	30 to 75% "
Last Chance.	135 to 238 "	"	35 to 78% "
Wonderful	113 to 133 "	"	70 to 76% "
Ruth.....	40 to 125 "	"	15 to 73% "
Monitor.....	142 to 367 "	"	32 to 57% "
Wellington.....	125 to 328 "	"	10 to 55% "
Whitewater.....	72 to 326 "	"	10 to 65% "
Dardanelles..	149 to 470 "	"	15 to 55% "
Enterprise.....	155 to 180 "	"	18 to 30% "
Two Friends	248 to 380 "	"	38 to 52% "
etc.,	etc.,	etc.,	etc.

The other Slocan mines have ore of the same character and high grade, as may be seen in detailed accounts below. The lowest values in the above indicate the lowest smelter returns on ore that is classed as "carbonates." The average value of all the ore sold has been given above.

ZINC.—In most of these veins the zinc blende carries a small silver value and is sorted or concentrated out of the ore, so that very little ore sent to the smelters has over 10% zinc limit. But in the "Enterprise" mine, on Ten-Mile Creek, the best silver assays are said to be got from the zinc blende, which is much more valuable than the galena. As is to be expected, small lots of very rich ore are mined, lots that will yield from one to two thousand ounces per ton, but the average figures already given will indicate the importance of these veins that are now being mined in both the granite and stratified rocks of the district.

2. The veins of *argentiferous tetrahedrite*, or gray copper and jamesonite and silver compounds in a quartz gangue.

These veins can be seen in the granite exposure on the "Best" and "Rambler" mines, and in the stratified rocks on the "London Hill" property, from which very high grade ore has been shipped.

3. The "*dry ore*" *veins* on Springer and Lemon Creeks, in the granite, with a quartz gangue containing argentite, native silver and gold.

These veins are now attracting much attention, as high assay returns have been secured as per smelter returns; sorted ore of this character from the Howard fraction yielding 163 to 206 ozs. of silver per ton, and $16 to $26 per ton in gold.

The "Chapleau" recently received the smelter returns on four tons of sorted ore, from which 3.6 ounces of gold and 94.7 ounces of silver per ton were returned, netting to the owners $102 per ton after deducting freight and treatment charges.

4. The *gold-quartz veins* in the southern part of the granite, such as those reported to be on the Alpine group.

The values and characteristics of the last three mentioned classes of vein will be better known later on, as the work now begun yields results and information.

COSTS.—*Mining* (*a.*) The cost of driving tunnels and drifts varies from $3 to $9 per foot in stratified rocks, and from $7 to $10 in the granite:

(*b.*) The cost of sinking shafts from $12 to $20, but so far little work of this kind has been done:

(*c.*) The cost of stoping cannot be ascertained, but the following table, compiled by Edmund B. Kirby, M. E., and given in a paper to the Colorado Scientific Society, December 3rd, 1894, from experience gained in Colorado, where nearly similar conditions and cost of labor, supplies, etc., obtain, may be of value:—

THE COST OF STOPING.

Thickness of Pay-streak. Calculated for ore when 13 cubic feet = 1 ton.	Tons per square fathom of ore shute.	Cost of stoping per ton.
A streak 4 inches wide yields	0.92	$17 33
" 6 " "	1.38	11 55
" 8 " "	1.85	8 67
" 10 " "	2.31	6 93
" 12 " "	2.77	5 78
" 14 " "	3.23	4 95

(*d.*) For labour, the average paid miners is $3.50 for 10 hours, $3 for 8 hours; timber men, $3.50 for 10 hours; shift bosses, $4 to $5 per day; blacksmiths, $3.50 to $4 per 10 hours; trammers and top men, $2.50 to $3 for 10 hours.

(*e.*) For supplies, No. 1 giant powder costs about 18 to 22 cents a lb.; No. 2, $9 per 50 lb. box; drill steel, 16 cents a lb.; candles, $7 a 40 lb. box; cordwood, $1.50 to $2.50 at the mine; rough timber, $11.50 to $12.50 per M. The cost of food and other supplies is now very reasonable.

Transportation—(*a.*) The cost of packing down ore on horses in the summer time varies from $5 to $8.50 per ton to railroad. In the winter time, by rawhiding, $2.50 to $3.50 per ton.

(*b.*) By waggons or sleighs, $1 to $2.50 per ton.

(*c.*) Cost of transportation from shipping centres to the smelters in the United States, from Sandon, $7.50; from Slocan City, $11.00.

Treatment—The treatment charges depend upon whether the ore is crude or "carbonates," and on the latter according to the percentage of lead. On the crude ore, or nearly pure galena, the smelter charges vary from $15 50 to $18 per ton; on the carbonates from $9 to $15 per ton; the $9 rate being given in one case where the lead did not exceed 20 per cent.

The smelters pay for 95 per cent. of the silver and 90 per cent. of lead, assay values, at the New York quotations at time of settlement.

For zinc, 50 cents is charged per unit—about 10 per cent. The duty on lead in the ore entering the United States is three-quarters of a cent per pound.

LEAD:—PRODUCTION.

Calendar Year.	Pounds.	Value.
1890	113,000	$ 5,805
1891	588,665	25,607
1892	1,768,420	72,505
1893	2,135,023	78,966
1894	5,703,222	185,355
1895	23,075,892	749,966
1896	24,199,977	721,384

SILVER PRODUCTION.

(As per Geological Survey Returns.)

Calendar Year.	Ontario.		Quebec.*		British Columbia.		Total.	
	Oz.	Value.	Ozs.	Value.	Ozs.	Value.	Ozs.	Value.
		$		$		$		$
1887 ..	190,495	190,495	146,898	146,898	11,937	11,937	349,330	349,330
1888 ...	208,064	208,064	149,388	149,388	37,925	37,925	395,377	395,377
1889 ...	181,609	162,309	148,517	133,666	53,192	47,873	383,318	343,848
1890 ...	158,715	166,652	171,545	180,122	70,427	73,948	400,687	420,722
1891 ...	225,633	221,120	185,584	181,872	3,306	3,241	414,523	406,233
1892 ...	41,581	36,072	191,910	166,482	77,160	66,935	310,651	269,489
1893 ...	.....	8,689	.....	126,439	... .	195,000	.....	330,128
1894 ...	.....	.....	101,318	63,830	746,379	470,219	847,697	534,049
1895 ...	.....	.....	81,753	53,343	1,693,930	1,105,289	1,775,683	1,158,633
1896 ...	.....	.....	.....	.....	3,135,343	2,100,689	.....	.....

IMPORTS OF LEAD.

Fiscal Year.	Old, Scrap and Pig.		Bars, Blocks, Sheets.		Value.	
	Cwt.	Value.	Cwt.	Value.	Cwt.	Value.
1880.....	.....	.....	.....	.....	30,298	$124,117
1881.....	16,236	$ 56,919	18,222	$70,744	34,458	127,663
1882.....	36,655	120,870	10,540	35,728	47,195	156,598
1883.....	48,780	148,759	8,591	28,785	57,371	177,544
1884.....	39,409	103,413	9,704	28,458	49,113	131,871
1885.....	36,106	87,038	9,362	24,396	45,468	111,434
1886.....	39,945	110,947	9,793	28,948	49,738	139,895
1887.....	61,160	173,477	14,153	41,746	75,313	215,223
1888.....	68,678	196,845	14,957	45,900	83,635	242,745
1889.....	74,223	213,132	14,173	43,482	88,396	256,614
1890.....	101,197	283,096	19,083	59,484	120,280	342,580
1891.....	86,382	243,033	15,646	48,220	102,028	291,253
1892.....	97,375	254,384	11,299	32,368	108,674	286,752
1893.....	94,485	215,521	12,403	32,286	106,888	247,807
1894.....	70,223	149,440	8,486	20,451	78,709	169,891
1895..... . ..	67,261	139,290	6,739	16,315	74,000	155,605
1896.	72,433	173,162	8,575	23,169	81,008	196,331

BOUNTY ON SILVER LEAD SMELTING.

In 1895 the Dominion Government enacted as follows:—

1. To encourage silver-lead smelting in Canada, the Governor-in-Council may, subject to the following provisions, authorize the payment of a bounty not exceeding

* The production of silver credited to Quebec represents the amount of that metal in the pyritous copper ores produced and exported from that province.

fifty cents per ton, and not exceeding in all one hundred and fifty thousand dollars, on Canadian silver-lead ore smelted in Canada between the first day of July, one thousand eight hundred and ninety-five, and the first day of July, one thousand nine hundred.

2. The said bounty shall not for any one year exceed the sum of thirty thousand dollars: Provided, that the said sum, if unexpended, or any balance thereof unexpended, may be carried forward from year to year and may be paid for any year in addition to the sum of thirty thousand dollars authorized as above for such year.

3. If in any year the quantity of ore smelted is greater than will allow of the payment, out of the sum available for that year, of fifty cents per ton, then the bounty per ton for that year shall be reduced proportionately.

4. The said bounty shall not be paid on any ores smelted in smelting works which are not established and in operation before the first day of January, one thousand eight hundred and ninety-seven.

5. The payment of the said bounty shall be under the direction of the Minister of Trade and Commerce, subject to such regulations as may be made by the Governor-in-Council.

6. The Governor-in-Council may make regulations in relation to the said bounty in order to prevent fraud and to insure the good effect of this Act.

7. The said regulations shall be laid before Parliament within the first fifteen days of each session, with a statement of the money expended in payment of the said bounty, and of the person to whom they were paid, and the places where the ore with respect to which they were paid was smelted, and such other particulars as tend to show the effect of the said bounty.

ADAMS BRITISH COLUMBIA CO., Ltd.

Registered 1897. Authorized Capital, £100,000, in shares of £1.

Directors:

Wilberforce Bryant. | W. C. Houstoun. | G. D. Jennings.
Capt. R. C. Adams.

Head Office:

A. G. Preston, *Secretary*, 28 Grace Church Street, London, E. C.

CANADIAN OFFICE:

Capt. R. C. Adams, Midway, B.C.

Formed to acquire and work the following mineral claims: Skylark, on Kootenay Lake, near Ainsworth; Bon Ton, Jackson Creek Basin, 16 miles west of Kaslo; Mount Adams Group, North Fork of Adams River; Cordick, Boundary Creek; and the Divide Group, near Osoyoos Lake, in the Okanagan Division, Yale District, British Columbia.

ALAMO MINING CO., Ltd.

Registered 1894. Authorized Capital, $500,000. Dividend of $35,000 paid October 1st, 1895.

Directors:

A. E. Humphrey. | N. D. Moore. | John Vallance. | W. C. Yawkey. W. H. Yawkey.

Mines Office: Three Forks, B. C.

Owns and operates the "Alamo" silver-lead claims at Twin Lake basin, in the Slocan District, Province of British Columbia. In this vein has been found one of the largest and most productive ore shutes yet mined in the Slocan. This vein strike, east and west (mag.) dip south 70° to 80°, crosses a deep spur from the main ridge, and thus offers the best of facilities for the driving of tunnels along it at different levels. Along this line of fissuring in the slates is much brecciated country rock, quartz, lime spar, spathic iron and ore, of which 8 to 9 feet of solid galena, interspersed with grey copper, have been stoped out, also carbonate ores, while much mixed or mill ore has been sent down to the concentrator. In some of the levels there has been encountered a cross-fault of considerable throw beyond which the ore shute has since been picked up. Tunnel No. 4, the lowest, extends west for 300 feet along the vein which here carries little ore, and the fault being met, the drift was run north-west 130 feet, then south-east 34 feet, striking again, apparently, the ledge. In tunnel No. 3, in 340 feet, and No. 2, a large amount of ore has been stoped out up to the Idaho side-line, the ore shute being 4 to 6 feet wide, the ore breaking to two smooth walls between which is both solid ore and ore mixed with shattered slates and quartz. Tunnel No. 1, 240 feet below the summit of the spur, was in several hundred feet, and the stopes from the lower levels continue on up for 30 to 40 feet above this level, when it pinches above where has been found the greatest width of ore in the mine. There is ample room for other tunnels below No. 4, and such will yet be driven in to exploit a large area of the vein. Ore is being found on other claims on this group, and men were at work prospecting and developing these other leads.

Transportation—(*a*) From tunnel No. 3 a 3-rail tramway, 340 feet long, ends in the ore-bins at (*b*) a very good waggon road, 3 miles long, dropping down 1,700 feet to the ore-bins at the head of (*c*) the exceptionally long 3-rail gravity tramway, 7,100 feet long, which is in two sections, 3,400 feet and 3,700 feet long respectively, and dropping 1,675 feet, delivers the ore into the bins at the mill at the C. P. R. track. The waggon road also runs down to the mill.

The Concentrator—From the supply bins of 1,500 tons capacity, the ore is trammed into the mill, which is built large enough to permit, if needed, the doubling of the present plant of machinery. On the upper floor, after passing over a grizzly, the ore is fed to a Comet breaker, whence it passes to 16 by 30 inch rolls, and thence by elevator to 3 5-foot trommels, delivering 4 sizes to the jigs on the next floor, of which there are (1) 1 coarse two-compartment Hartz jigs, (2) 2 three-compartment Hartz jigs, and (3) 3 four-compartment Hartz jigs. The middlings pass to a 5-foot Huntingdon mill, and for classifying the fine stuff, Lake Superior classifiers are in use, the tailings going into V-shaped settlers, that feed to 4 double-decked 18-foot round tables. The power is got from a Pelton wheel generating 80 h. p., with water under a 224-foot head in a 12-inch penstock, from a flume that runs about 2 miles to the head gates on the south fork of Carpenter Creek, the water of Howson Creek being also utilized. The sacked concentrates are then loaded directly upon the railroad cars.

ALPHA SILVER MINE.

Owners :

Jas. McNaught. | Alex. McKenzie. | Jas. McKenzie.

Mines Office : F. McNaught, Silverton, B.C.

The claims upon which this mine is situate, comprises 51·67 acres, is located about 2½ miles from the Town of Silverton, Slocan District, Province of British Columbia. In consequence of litigation no work has been done for some time. About 1,000 tons of ore sold averaged 115 ounces silver and 70% lead.

ANTOINE SILVER MINE.

Owners :

W. S. Green. | C. H. Green. | J. C. Ryan. | Alex. Smith. | James C. Ryan.

Mines Office : J. C. Ryan, Superintendent, Kaslo, B.C.

This mine is situate at Ruby Silver Basin, in the Slocan District, British Columbia. Opened by shaft and two tunnels.

ARGO MINES OF SANDON, Ltd.

Capital, $100,000. Shares $1.00 each.

Trustees :

Wm. Christie. | Wm. K. Leighton. | Angus R. Johnston.

Herd Office : Sandon, B.C.

Formed to acquire and work the "Argo" and "Belt" mineral claims, situate in Slocan Division of the District of Kootenay, Province of British Columbia. At date of report development by means of a tunnel was proceeding.

ARLINGTON MINE.

Owners :

R. Cooper. | C. Fielding.

Head Office : Slocan City, B.C.

The mine is located about six miles from the Town of Slocan City, Slocan Mining District, Province of British Columbia. Opened by tunnels and shaft. Being worked with a small force.

BONDHOLDER MINING CO., Ltd.

Incorporated 1896. Authorized Capital, $1,000,000.

Directors :

R. G. Tatlow. | C. T. Dunbar. | E. P. Davis.

Head Office : R. G. Tatlow, Managing Director, Vancouver.

Mines Office : R. C. Campbell-Johnstone, M.E., Manager, Bondholder Mine, Slocan City, B.C.

Owns and operates the "Bondholder," "Pine Log," "Lone Star," and "Rosebud" mineral claims, situate between Springer and Ten Mile Creeks, in the Slocan Division of West Kootenay, Province of British Columbia. 30 persons employed in 1896.

BRITANNIA MINING CO., Ltd.

Officers :

Chas. de W. Smith, *President.*
A. E. Shaw, *Secretary.* | Leander Shaw, *Superintendent.*

Mines Office : L. Shaw, Ainsworth, B.C.

Owns and operates the No. 1 mineral claim, located two and a half miles west of the Town of Ainsworth, Ainsworth Mining Division, Province of British Columbia. "This," says Mr. Carlyle, is one of the earliest worked mines in West Kootenay, considerable work having been done at the time of Dr. Dawson's visit in 1889, and up to the present time about 1,000 tons of ore and concentrates have been shipped. The ore body, as now developed by large stopes that are from 4 to 12 feet between walls, and nearly 300 feet long, would require very careful study with complete maps and models to explain its formation and relation to the enclosing rocks, which belong to the Slocan slates series that at this point consists of limestones and shales and slates. The existence of many faults of very different strikes and dips has certainly served to increase the apparent irregularity of the ore body, which, while having a general dip throughout the workings, is in places lying flat or dipping in exactly the opposite direction to the main direction, while in one part of the mine the ore-shute, divided into two flat-lying shutes, which the men worked out, leaving but a few feet of barren rock between. At the time of examination there was a good amount of ore in sight (Oct. 22nd), but the stoppage of the concentrator by lack of water was retarding mining, and some development work only was in progress. The ore is almost unique in its character. In the early workings considerable rich "carbonate" ore was mined, or the decomposed part of the ore-body immediately amenable to surface influences, but now the ore has a quartz and calcite gangue, or rather, the country rock is replaced in part by quartz and iron pyrites and some zinc blende, but very little galena, the silver value being in direct ratio to the amount of iron pyrites

present, first-class or shipping ore, averaging 75 ounces of silver, 3 to 8 per cent. lead, and seldom over 10 per cent. zinc limit. The mine is now worked through a tunnel running N. 75° W. 375 feet, when it turns and follows along a fault wall 157 feet (W. 15° E.) and connects with a winze to the stopes, 35 feet above. This drift is to be continued, and when in 100 or 120 feet, will probably intersect the ore zone, and by connecting with an incline from the stope, now down 35 feet along the foot-wall, which here has a 45° pitch, the further exploration of the property should be made much easier while giving a much better outlet for the ore. the present means, by the rapid advance of work having become unhandy. The mill ore-bins are just below this tunnel level. No work is being done to exploit this property beyond the work under way in this ore-shute, but there can be little doubt that as the ground is further opened up along the ore-bearing horizon, as soon as this is definitely determined, if not too much obscured by faulting, or along the fault fissure through which the ore-bearing solutions have found access, and then a place of lodgment in this formation, that more ore and other ore-shutes will be developed and mined.

The surface improvements consist of several log cabins, boarding-house, office, assay laboratory, stables, and the concentrating mill that has cost $16,000 to $17,000.

Concentrator—For six months of the year sufficient water for milling purposes is available, and by putting in a flume to tap another small stream, it is expected that then there will be water for the whole year for the mill, with enough, part of the time, to supply power generated in the low-water season by the present steam engines. While some first-class ore is shipped direct, most of the product of the mine goes to the mill, the capacity of which is 18.20 tons per 24 hours, concentrating 8 to 1, yielding concentrates that average 295 to 300 ounces in silver, 4-8% lead, and usually less than 10% zinc. Experiments have shown that ore assaying 15 to 20 ounces silver per ton can be mined and concentrated with a good margin of profit.

The mill is 45 by 75 feet, with an addition along one side 15 feet by 75 feet, and is supplied with (*a*) 100-ton ore bins, (*b*) 1 Dodge ore crusher, (*c*) 2 7-foot trommels giving three sizes, (*d*) geared rolls, (*e*) 4-4 compartment Hartz jigs and 2 4-compartment slime jigs (Hartz), (*f*) elevators and hydraulic classifiers, (*g*) 1 Frue Vanner 6 by 12 feet, and one Embrey or end-shake vanner 4 by 12 feet, and settling tanks. This machinery was supplied by Fraser and Chalmers, of Chicago, and the Colorado Iron Works, Denver, while (*h*) the 35 h.p. engine and boiler came from the Phœnix Iron Works, Meadowsville, Pa.

BYRON N. WHITE CO., Ltd.

Incorporated 1893. Authorized Capital, $500,000. Dividends paid to date, $300,000

Officers :

Angus Smith, Milwaukee, Wis., *President.*
Byron N. White, Sandon, B.C., *Vice-President.*
J. Hoyt Smith, Milwaukee, Wis., *Sec.-Treas.*

Mines : Byron N. White, Vice-President, Sandon, B.C.

Formed to acquire and work the Slocan Star and other mineral claims in the Province of British Columbia. The Slocan Star is situated on Sandon Creek, in the Slocan District, B.C. It was discovered in August, 1891, and has been worked continuously since.

Ore Body—"The vein," says Mr. Carlyle in his annual report, "cuts across the steep, heavily timbered mountain side and nearly at right angles to the well stratified slates, quartzites and silicious limestones of the Slocan slate series, with an east and west

strike and a dip of 54° to the south. While this vein has been traced through and beyond this property into other claims, it has not yet been traced continuously, nor has it any constant width, varying from a width of a few feet to 20 or 30 feet, with in other places no signs of mineralization at all along the fissure along which the country rock has been more or less shattered, and the ascending mineral-bearing solutions have formed large deposits or shutes of fine ore. A large porphyry dyke runs nearly parallel with the vein and in places in the mine is found in it, but evidently effected by this fissure.

Along this fissure is seen much brecciated slate cemented together by the gangue materials, galena and blende, and in many other parts of the mine was noticed more or less parallelism in the deposition of the different minerals; but one interesting peculiarity noticed was the fact that many samples of ore clearly showed by the separation by the quartz of corresponding parts that the sulphides, as galena or blende, after deposition, had been shattered, perhaps, by further movement along this line of break, and then cemented into the present mass by quartz.

It is doubtful if two well defined walls can be traced in this mine, for while the hanging or fissure wall is very distinct, the ore merges into the country rock towards the supposed foot-wall, but more time could not be spent in very careful observation. In the mining of this one large ore shute as has been opened up and exploited upon the Slocan Star, the ore body has been found to vary from a few feet to 25 feet in width of mixed but pay ore, and a large amount of ore has been mined from bodies 2 to 8 and 10 feet wide of solid galena.

The first-class ore consists of the nearly pure galena, both fine and coarse-grained, carrying some grey copper and some blende, but not enough to pass the excess line, or 10 per cent. of zinc. Average value, 95 oz. silver per ton, 72 to 75 per cent. lead. This ore is sacked and shipped direct to the smelters. The concentrating ore consists of the mixed ore or the spathic iron quartz gangue with galena, with a little grey copper, and in all the ore there are evidently some of the silver sulphides. The large amount of mixed ore taken from the upper workings and kept separate became available on the construction of the concentrator, and was being sent down the hill. In concentrating most of the blende is removed so that the concentrates carry not more than 6 per cent. zinc. Average value of concentrates, 80 oz. silver per ton, 70 per cent. lead.

This main ore shute has been developed for a distance of 430 feet along the vein, and to a depth of nearly 350 feet from the surface down on the dip, and from it several small bodies of ore have formed along divergent crevices.

Tunnel No. 1 was first run into the large surface exposure for 50 feet, and then stopes were run to the surface or 30 feet.

Tunnel No. 2 is a cross-cut for 100 feet, and then a drift for 100 feet, with a stope up to No. 1 80 ft. long and 4 to 10 feet wide.

Tunnel No. 3 is 70 feet below No. 2, and in cross-cutting at 70 feet, intersecting a leader of ore drifted upon for 25 feet, and then passing through the slates, more or less mineralized, cut the main lead at 150 feet. A drift 150 feet to the west, through low grade ore, entered a splendid body of high grade ore, which on being stoped back 110 feet to the east, had led back to within a few feet of connecting with the short drift run at a 70-foot mark in the tunnel, thus leaving a pillar nearly 40 feet wide of what promises to be low grade, but paying, concentrating ore. This stope is now 180 feet long and 4 to 7 feet wide, and is worked up for most of the distance to the upper level, while the drift has a total length of 430 feet, along most of which is much concentrating ore. But this shute has developed its largest and most productive ore body between the level and No. 4, below which no work will be done until Tunnel No. 5 reaches the ledge.

Tunnel No. 4 was the main working entry at the time of visit, and here were erected the ore-bins at the upper terminal of the gravity tramway to the concentrator At a distance of 575 feet this tunnel entered the vein, where it was 10 to 12 feet wide, and to the west a drift of 75 feet long had been encountered, a fault which had not been explored, but up along which a stope had been extended a short distance in, 8 to 10 feet of mixed ore. Easterly from the tunnel, at 100 feet, an up-raise had been made 210 feet to the next level, and all the way in good but mixed ore, with 14 to 16 feet of concentrating ore at the foot or tunnel level. At 150 feet in this east level a cross-cut showed up a width of over 25 feet of mixed ore with several feet of solid

galena, but at the face, or 225 feet, the shute was then narrowed to 3 feet. A large amount of stoping has been done for 70 or 80 feet below level No. 3, where the body of clean ore had been 8 to 10 feet thick, but a large amount of ore was still showing in all the limits of these stopes.

Tunnel No. 5 was in 200 feet in the slates, with 600 feet remaining to reach the vein 210 feet on the dip below level No. 4. The ground was all ready for the building and air compressor plant, *i.e.*, 4-drill Rand and an 80 h.p. boiler, and rapid progress would be made with the machine drills in the extended exploration of this claim along this level.

On the "Silver King" to the east, near the vein exposure in the creek, a tunnel had been driven in 80 feet, but although there was considerable ore for some of the distance, the ground was much broken up. To the west, on the "Silversmith," ore was exposed in some shallow cuts, but this claim has in reality been but very little prospected.

Timber and water are abundant for mining purposes—the timber being of large size, and immediately at the mine, where the stopes are timbered up with heavy stulls and lagging.

A steep waggon road from Sandon climbs up past the mill to tunnel Nos. 3, 4 and 5, but all ore is sent down to the mill by the 3-rail gravity tramway, about 1,600 feet long, covered where necessary by snow-sheds, the concentrating ore being automatically dumped into the mill bins, the sacked first-class ore being loaded into ore waggons or sleighs, and drawn, also the concentrates, half mile to the railroad at Sandon, at a cost of 80 cents per ton. Number of men employed 83, of which 55 were in the mine, and 10 at the mill.

Concentrating Plant — This mill, designed and constructed by Mr. T. L. Mitchell, Sandon, is situated at the foot of the tramway, and is 46 by 102 feet, with four floors.

Bins—There are two, 150 tons capacity each, one for the coarse ore from the mine, the other for crushed ore below the crusher for supply.

Power—(*a*) A Pelton wheel, a 3-foot steel disk, with a $1\frac{7}{16}$ in. nozzle, supplies, when the water is sufficient, ample power, and is situated on the upper floor, so that the water from it, after going through a 12-mesh screen, may be used for washing in the operation of the mill.

(*b*) When water is scarce, an auxiliary steam engine will be used, or a 40 h. p. engine, with a 50 h. p. boiler.

Water—(*a*) A flume 3,000 feet long in two branches, brings from Sandon and another small stream, water that flows down through 1,200 feet of spiral rivetted steel pipe, the lower 250 feet 7 in. in diameter, with a total head of 471 feet at the wheel. (*b*) Another flume from Cody Creek, 9,650 feet long, 2 x 2 feet, on a 0.2° grade, costing $7,400, now supplies water for washing purposes in the mine, but has no head for power.

Machinery comprises—A Blake crusher, Reliance pattern, 9 by 15 inches; four sets of rolls, Reliance pattern, 14 by 26 inches; six Hartz jigs, *i. e.*, 2 double 2-compartment, and 1 double 3-compartment jigs; six 2-compartment Collum jigs; elevators, trommels, classifiers and settling tanks, etc.; two donble-decked round slime tables, 18 feet diameter.

The ore from the crusher is automatically fed by a camfeeder to 2 sets of coarse rolls, whence the material is elevated by elevator No. 1 into one revolving screen with 3 sizes of screens, from which (*a*) the refusal of the screens passes to 2 coarse Hartz jigs; (*b*) the material from the 16 m.m. (.64 in.) screen, to 2 coarse Hartz jigs; (*c*) the material from the 7 m.m. (.28 in.) screen, to 2 coarse Hartz jigs; (*d*) the material from the 3 m.m. (.12 in.) screen, passes to 2 three-compartment hydraulic classifiers, which give 3 separations, each of which goes to two of the double-compartment Collum jigs, while the overflow passes on to the V-shaped settling tanks, or species of spitz-kasten, from which each of the four sizes of fine stuff goes to its own slime table.

The pitch of each slime table is different, so as to conform to the size of the fine sand fed to it, and by using two water sprays, 3 separations are here made, the heads, middlings and tails, of which the middlings pass back by elevator No. 2, to the hydraulic classifiers.

The middlings from four coarse jigs pass to the coarse set of middlings rolls, and thence back to elevator No. 1, the 7 m.m. middlings to middlings rolls, and thence

to elevator No. 2, while the fine middlings from six Collum jigs go to fine middlings rolls, which discharge into elevator No. 2. The automatic discharge material from six coarse jigs, and the sieve work from the six Collum jigs, and the heads from the tables, pass by the concentrate sluices to the concentrator bins below, whence they are shoveled into sacks of 155 pounds to 160 each, while the over-flow, carrying much fine material, goes into the settling tanks in the slime house.

Capacity of mill is up to 150 tons of ore per 24 hours, the ratio of the concentration varying, of course, with the grade of the ore sent down from the mine.

The product is very clean galena, with seldom over 6%, and never up to 10%, of zinc, but there is a considerable loss of silver, some of which is carried away in the blende, while the greatest source of loss is believed to be in the grey copper, much of which escapes in the finest slimes.

Cost was, for buildings, $12,700; for machinery, not including engine and boiler, $17,000.

CANADIAN PACIFIC MINING AND MILLING CO.

Incorporated 1895. Authorized Capital, $500,000.

Head Office: Minneapolis.

Mines Office: J. R. Hardie, Superintendent, Ainsworth, B.C.

Owns and operates the "Amazon," "Budweiser," "Superior," and "Wakefield" claims at Woodbury Creek, near Ainsworth, Province of British Columbia. The following details of the development and plant are from the report of the Minister of Mines for the year 1896:—

Budweiser—One of the tunnels was in 65 feet, and following along a fault plane above which the rock is much fractured and seamed with little quartz veins, carrying a small amount of copper and iron pyrites and some galena, also $3-5 in gold. Upon the face of the cliff could be seen a quartz vein, following along this line of break, while 25 feet to the north is a small parallel vein of galena. Between these two veins or 25 feet, this rock, carrying a small percentage of sulphides, is said to be concentrating ore, but this has yet to be proven by mill tests.

Two other prospecting tunnels are on this claim, one 60 ft. long, in the wash, from which large boulders of brecciated rock have been taken, carrying a very fine grained galena, assaying 30-40 oz. in silver. Another tunnel, 45 feet, followed a small vein of large cubed galena.

Amazon—This tunnel, being run with a machine drill, was in 120 feet, following a galena blende vein dipping also southerly 70° to 75°, with, in places, 8 to 14 inches of solid ore in quartz and calcite. This vein can be seen running up the face of the cliff, and in places is four feet wide, and what is rather unusual the ore carries considerable pyrrhotite. On another vein, 14 to 20 inches wide, two tunnels have been run in on either side of the creek, one for 140 feet, the other for 120 feet.

Wakefield—On the top of the bluff a shaft has been sunk 140 feet in another vein of mixed galena ore, 4 to 24 inches wide, that gives good assays in gold.

There has been built, at a cost of $6,000, a splendid flume 1,200 feet long, 3½ by 4 feet, to the mouth of the creek, where the water enters a 36-inch penstock or pipe, which at the bottom has a Y-connection to two Pelton wheels, under a head of 75 feet. A 42-inch Pelton is now running a 12-drill air compressor, made by the Ingersoll-Sergeant Drill Co., Montreal, while the mill will be run by a 6-ft. wheel, both wheels having a 5-multiple nozzle. Along the top of the covered flume runs the air pipe and track, and 500 feet farther to the farthest present workings from the mill.

The mill, situate one-quarter mile from the lake, is being built by Mr. M. A. Halman, of Carterville, Missouri, U.S., who is equipping the mill with crushers, rolls,

jigs, etc., from that place, and is following the Missouri method, or by exclusive use of jigs without vanners or slime tables. The ore bins are immediately below the tramway, and the capacity of the mill will be 75 tons for 24 hours. A tramway has been built for 1,400 feet to the lake side where is deep water, and ore and concentrates will be easily loaded into the steamers. Cost of mill, $12,000.

DARDANELLES MINING AND MILLING CO., Ltd.

Incorporated 30th November, 1896. Authorized Capital, $1,000,000, in shares of $1.00.

Officers :

Hon. Edgar Dewdney, *President.*
A. P. McClaine, *Vice-President.* | A. L. McClaine, *Sec.-Treas.*

Directors :

Hon. E. Dewdney. | A. F. McClaine. | A. L. McClaine. | W. H. Adams, Sir Charles H. Tupper, M.P. | J. B. McArthur. | D. W. Moore. Hon. F. Peters. | Lt.-Col. S. W. Ray.

Head Office : A. L. McClaine, Sec.-Treas., Spokane, Wash.

Mines Office : W. J. Trethewey, M.E., Sandon, B.C.

Owns and operates the Dardanelles, Diamond Cross, Dardanelles No. 2, O'Kanagan, and Lady of the Lake Fraction mineral claims, comprising 175 acres in the Dardanelles Basin, within four miles of the town of Sandon, Slocan Mining Division, British Columbia.

On the vein of the Dardanelles, cutting across the Slocan slates and the porphyry dykes, a shaft has been sunk 220 feet and 1,300 feet of drifts and raises run, and from these workings over 250 tons of high grade ore were shipped that averaged 265 ounces of silver per ton and 26% lead, while several hundred tons of second class ore, said to assay over 75 ounces of silver and 16% lead, were piled on the dump, 76 tons of which were shipped to the Pilot Bay smetter, giving the above returns. From a copy of the smelter returns the ore is seen to have run from 145.8 to 470.2 ounces of silver per ton, and from 15 to 56% lead; one shipment of 10 tons giving this highest return, while 115 tons yielded 300 ozs. of silver per ton. The ore carries a few units excess of zinc above the 10% smelter limit.

Other veins have been slightly prospected upon the Okanagan and Diamond Cross, but these will now be properly opened up. In the 220 foot shaft the small plant of a 7 h.p. boiler and a No. 6 Knowles pump, was quite inadequate to handle the water, and a plant of requisite capacity will now be put in, and this vein will be extensively exploited. There is a good supply of timber for mine purposes ; and for transportation at present a trail 1½ miles leads out to the Washington waggon road and thence to McGuigan's Siding on the Kaslo and Slocan Railway.

DRY BELT MINING AND MILLING CO., Ltd.

Capital, $1,000,000. Shares $1.00 each.

Trustees :

Milton W. Bruner. | Ira W. Black. | Samuel D. Hendee.

Head Office : Sandon, B.C.

Formed to purchase the Cordelia Mineral Claim, situate on the North Fork of Carpenter Creek, in the Slocan Mining Division, B.C.

FISHER MAIDEN CONSOLIDATED MINING AND SMELTING CO. (Foreign.)

Capital, $1,000,000. Shares $1.00 each.

Head Office: Spokane, Washington, U.S.A.

Mines Office: Silverton, B.C.

Owns and operates the Fisher Maiden group of silver lead claims, near Silverton, B.C. Being opened up.

GALENA MINES, Ltd.

Registered 1896. Authorized Capital, £550,000 in shares of £1.

Directors:

Col. Robert Baring. | Capt. H. French. | Andrew Haes.
Fred Burdett. | P. Comiskey.

Head Office: P. F. Dietz, 20 Threadneedle Street, London, E.C., Eng.

Mines Office: C. W. Callahan, M.E., Silverton, B.C.

D. J. McDonald, *Mine Superintendent.*

The company has been incorporated to acquire and work one of the properties belonging to the Vancouver and British Columbia General Exploration Company, Ltd., which comprises six valuable Silver-lead mining claims known as the "Grover," "Peerless," "Currie," "Currie Fraction," "Stevenson" and "Kate" (locally known as the Galena Farm or Currie Group), containing about 193 acres, situated on the east side of Slocan Lake, about two miles by waggon road from the town of Silverton, in the district of West Kootenay, British Columbia.

A test shipment of about three tons of ore, taken from the No. 2 shaft, sent to the Tacoma Smelting and Refining Co., Tacoma, Washington, U.S.A., has given the following results: 94 ozs. silver, 59.2 % of lead per ton of 2,000 lbs. Gross value, $87.35 per ton.

The price paid by the company for the above properties was £500,000, payable as to £475,000 in shares, and the balance of £25,000 in cash.

Property being opened up and equipped with necessary working plant.

GIBSON MINING AND MILLING CO., Ltd.

Incorporated 1896. Authorized Capital, $650,000.

Officers:

E. W. Talbot, Spokane, Wash., *President.*
F. E. Lowery, Spokane, Wash., *Vice-President.*
Charles Scheel, Kaslo, B.C., *Treasurer.*

Head Office: G. E. Kumpe, Secretary, Spokane, Wash.

Mines Office: M. Hicks, Superintendent, Kaslo, B.C.

Owns and operates the "Gibson" and "Palouse" mineral claims, located on the South Fork of the Kaslo river, about eleven miles from the town of Kaslo, Slocan District, Province of British Columbia. Development at last report was by several open cuts on surface, and a cross-cut tunnel being run to tap all three leads. The first is tapped at a depth of 35 feet, the second will be tapped at 50 feet, and the third at 150 feet. The length of this tunnel will be 250 feet. A second tunnel has been run on No. 3 lead at a depth of 80 feet, and is in 4 ft. 6 in. of ledge matter.

GOODENOUGH MINES, Ltd.

Capital, $800,000. Shares $1.00 each.

Trustees:

G. A. Whittier. | J. H. Thompson. | John M. Martin. | A. W. Goodenough.
D. W. Moore.

Head Office: Kaslo, B.C.

Formed to acquire and work the "Goodenough" mineral claim, situate in the Slocan Mining Division of West Kootenay District, B.C. Being opened up. Smelter returns for carload lots giving from 277 to 507 ounces of silver per ton, and 48 to 67 per cent. lead for galena ore, and 168.5 to 322.5 ounces silver per ton, and 2 to 34 per cent. lead for carbonate ores, while one lot of 6½ tons assayed 768 ounces silver per ton, and 64.1 per cent. lead.

HALL MINES, Ltd.

Registered in London, 5th June, 1893. Authorized Capital, £300,000, in shares of £1, £50,000 in preference and the balance in ordinary. The preference shares rank first for 7 per cent. cumulative dividends, have a priority as to capital, and may be redeemed by the Company at 25 per cent. premium after the expiration of five years from issue. Of the preference capital £25,000 has been subscribed, and £12,500, or 10s. per share, called up; and of the ordinary £250,000 has been subscribed, and £212,500 called up, 175,000 shares (issued to the vendor) being fully paid up, and £75,000 having 10s. called. In addition to the ordinary shares as above, the vendors received £40,000 in cash. Director's qualification, £500 of ordinary shares.

Directors:

Sir J. W. Crutch, K.C.M.G., *Chairman.*
J. R. Brown. | J. R. Drake. | R. Day. | D. H. Gibb.
Walter Neilson. | Flint Ramsay.

Head Office:

F. Ramsay, *Secretary*, Leadenhall Bdgs., Leadenhall Street, London, E.C.

CANADIAN OFFICE:

H. E. Croasdale, General Manager, Nelson, B.C.

M. S. Davis, *Mine Superintendent.* | P. Johnson, *Superintendent of Smelter.*

Formed to acquire copper and silver mining properties situated iu the West Kootenay District, British Columbia.

The following properties are owned and operated by the Company: Silver Copper Bearing—"Silver King," "Kootenay Bonanza," "American Flag," "Koh-i-noor," "Lake Side." Gold Bearing—"Daylight," "Britannia," "J. M. B." "Bid," "Grand," "Jessie." For Mineral Location—"Eureka," "Rose," "Thistle," "Shamrock," "National Emblem," "Horse Shoe." For Iron Flux—"Iron Hand."

Development—During the year 1896 mining operations were confined mainly to the "Silver King," as follows:—

Drifting.—	No. 5 Tunnel	310 ft.	0 in.
	No. 1 Level, Winze "G," first ore body	79 "	6 "
	No. 3 Level, West, Winze "F"	48 "	0 "
	Cross Cut, No. 4 Level, ditto	21 "	0 "
	No. 3 Tunnel, East Drift	46 "	6 "
	Total	505 ft.	0 in.
Sinking.—	Connecting No. 3 Tunnel with Upraise No. 1 Level	30 ft.	6 in.
	Winze "H" Air Shaft from surrface to No. 5 Tunnel	109 "	0 "
	Total	139 ft.	6 in.

No. 5 Tunnel—This has been driven on what is called the "Dandy" vein, which has thus far proved to be a vein of 3 to 4 feet in width, carrying galena and yellow copper pyrite, and lies to the north of the strike of No. 4 tunnel 62 ft., and north of the estimated strike of the main ore body about 200 ft.

The course of this tunnel has been changed at 400 ft. from entrance in a more southerly direction, in order to reach the "First Ore Body," which has been proved by diamond drill, underlying "Winze G," and to connect with this winze.

"Power Drills" were used for driving this tunnel during April, May and June, when the compressed air supply then available had to be used for pumping and hoisting in the No. 4 tunnel and work discontinued.

During the last week in September, as the air supply had now been largely increased, two power drills were put to work in this tunnel, and continuous and more rapid progress may now be expected.

No. 1 Level Winze "G."—29 ft. 6 in. east and 50 ft. to the west on the vein, which to the east was found to narrow down and become poor in grade; westwards was also on the vein, and proved to be 3 ft. in width of good ore the entire length, with face of drift still in ore. Average samples taken from this vein gave results of 60 ozs. silver, 5 per cent- copper.

No. 3 Level Winze "F."—Drift 48 ft. west. This is also in the vein, and shows chiefly grey and yellow copper through the entire length with face still in ore.

No. 4 Level Winze "F." Cross-cut from foot of Winze "F" through the vein 21 ft. shows ore chiefly grey copper entire distance, with ore still in face; averaging silver 35 ozs., copper 4 per cent.

No. 3 Tunnel—Drift 46½ ft. from old cross-cut, following the ore in easterly direction, until cut out by barren vein rock. Stoping has been carried on from mouth of No. 3 Tunnel in towards this drift, which has exposed a body of fair grade ore carrying mostly grey copper.

Connection of Upraise with No. 3 Tunnel.—This was done by sinking on the vein from No. 3 Tunnel, following down on footwall side. Some very good grey copper ore was found, and of better grade throughout than showing in upraise from No. 1 Level. This connection was made for purpose of running down the ore stoped above No. 3 Tunnel to chutes at No. 4 Tunnel level.

Winze "II" Air Shaft, sunk from surface, following down the supposed "Dandy" vein to level of No. 5 Tunnel, for ventilation purposes. The vein showed to be varying in width of from three to six ft., carrying galena and yellow copper, the galena streak in places being about two feet wide of clean ore, assaying silver 20 ozs., lead 65 per cent.

Development Work by Diamond Drill — This was carried on only at the Kootenay Bonanza and during the time of the snow melting, so as to obtain the required amount of water. Six holes were put down at a point near the large outcrops east of the shaft, and the ore by a series of angle holes traced down to a depth of 190 feet from the surface, the results of which were unsatisfactory, on account of the oxidized nature of the ore where primed, making it difficult to obtain cores except in short broken up pieces. Beyond this depth the vein where pierced proved to be valueless. As no ore-shute could be found it may be accounted for by our not knowing the proper dip of the ore chutes at this point, and it is hard to define this from bore holes alone. In our present workings in "Silver King," the dip and strike of pay chute is obtainable from mine workings and gives more reliable data to work from in planing bore-holes.

At Kootenay Bonanza this is only obtainable from surface croppings, and there is no certainty of finding the ore immediately below any of these at depth. Three holes were also put down close to the Eastern Boundary line of Kootenay Bonanza claim, under what appeared to be an outcrop, but there also showed up nothing of value, the water supply then giving out, and requiring drill at Iroquois Group to prove vein there during first portion of bond, I abandoned any further prospecting with drill at this point. After snow had gone, deeming it advisable to learn more about the surface croppings, I had a series of open cuts made through the surface soil exposing the outcrops of vein, finding the common oxidized manganese cap rock in every instance; these cuts proved a continuous vein on surface varying in width from 4 to 20 feet.

Stoping—This has chiefly been confined to the ore body overlying Nos. 3 and 4 Tunnels, with the exception of a narrow stope carried through No. 3 level.

The amount of ore taken from mine since stoping was properly commenced in March last has been 15,121 tons.

Mining Machinery.—Large and commodious buildings at the mouth of No. 4 tunnel contain engine, compressor and boiler rooms, sorting floors and blacksmith shops, &c. The plant comprises:

(*a.*) 1 Corliss steam engine, 16 by 36, made by Albion Iron Works, Victoria, B.C.
2 60-h.p. boilers made by Ingersoll-Sergeant Rock Drill Co., Montreal; and
1 35-h.p. boiler with boiler feed pumps;
1 10-drill air compressor, 18 by 24, Ingersoll-Sergeant, Montreal;
1 2-drill " " " "

(The engine fly-wheel is 12 ft. by 22 inches, with belting to pulley on shaft, whence another belt from the driving pulley runs back to fly-wheel of compressor, 10 ft. by 18 inches.)

(*b.*) Work shop, with lathe, &c.

(*c.*) 1 No. 3 Gates rock-breaker, in which large stuff is thrown from sorting floor, thence to bins for the 3-rail gravity tramway; also a small Dodge crusher for breaking the samples for assay.

(*d.*) Saw-mill, with planer, &c.

The compressed air, at 80 lbs. pressure, is conveyed through the tunnel in an 8-inch spiral riveted steel pipe, thence by iron pipes and hose to the drills, which are used in driving headings, all stoping being done by single-hand work. The fuel, or cord-wood, costing $1.25 per cord, is cut on the property.

Smelting Works.—The smelter built by the company near the lower end of the tramway, on the outskirts of Nelson, and ¼ mile from the Kootenay River, was first

blown in Jan. 14th, 1896, and has been in blast (at date of report) for 255½ days. At tramway terminal are 7 bins of 1,000 tons each, from which ore is lowered by a 2-car gravity tramway 400 feet long to the smelter ore-bins.

Furnace Room.—There is one water-jacketted blast furnace, 42 by 100 inches at the tuyeres; tuyeres 3 ft. 8 in. from floor; feed floor 17 ft. from floor; water jackets 4 ft. 6 in. high and of steel; 6 tuyeres of 3 in. nozzle on each side. At the time of visit the ordinary solid foundation hearth had been replaced with a removable crucible, consisting of a steel plate frame 21 inches high, on a strongly braced cast-iron bottom, laid with cold water pipes in the tightly rammed steep, on which are laid fire bricks on end, 3 inches below the water-jacketted tapping-hole. This crucible is mounted on jack-screws with a 6-inch play, on a strong carriage on rails running lengthwise under the furnace and extending each way, the track at the back of the furnace carrying a duplicate hearth, while covered in front with iron plates, thus permitting the quick replacement of a hearth that is pushed under and jacked up snugly against the water-jackets, suspended by legs and hangers from the I-beams.

The fore-hearth is mounted, 5 ft. square, 2 ft. 6 in. deep, lined with common red brick, and the slag runs into a large wheeled slag-pot, which traps a small amount of matte, but more especially provides for accident, in case there is delay in tapping the fore-hearth, and thence drops 4 ft. from a long iron spout into an iron-lined water-box to be granulated and swept out to the dump by the rapid stream of water. From the tap-hole of the fore-hearth, the matte runs along an 8 ft. solid iron gutter, to a series of moulds on a carriage, 18 in. by 12 in. by 8 in., holding 220 lbs. of matte each, into which, while molten, is stuck an iron hook, for convenience in lifting afterwards.

Another furnace, designed by Mr. Johnson, with same kind of movable hearth 44 by 144 inches at tuyeres, capacity over 200 tons per 24 hours, 8 tuyeres on each side, with a bosh both in the stack and the water-jackets, is being erected, while the building is so arranged that five stacks in all may be put in easily.

This new furnace, by means of the mounted hearths, may be utilized for lead smelting, by replacing, in a very short time, the crucible for copper work by one suitable for lead smelting.

Dust Chambers are of brick on a stone foundation, 175 ft. long, 8 ft. wide, 10 ft. high, leading to a stack 177 ft. high from the base, but nearly 200 ft. above the furnaces, built of red brick (from Spokane) on a granite foundation. Most of the dust collects in the front part of the chamber, and in the two pyramidal hoppers in the iron down-take.

Engine room contains at present a temporary plant of an 80-h.p. engine, 14 by 18 in., operating a No. 6 Root blower; a 5 by 16 ft. tubular boiler, feed pumps, etc. This building is to be extended for the installation of another engine and blower, that are to be so combined as to be on the same bed-plate. By the C.P.R. trestle, the fuel (wood) is brought to the door.

Water.—A solid masonry reservoir, built in a very favorable basin in the granite, capacity, 150,000 gallons, 50 ft. above the smelter floor, is fed by a small stream, but to insure a proper supply of water—in case this source should fail, a large wooden tank stands on the end of the railway trestle, and is kept full by a small steam pump down on the bank of a constant-flowing stream below.

The Sampling Works, 40 by 60 ft. two stories high, have the upper floor so that barrows can be wheeled directly into the railway cars, to load matte for shipment, or unload ore from other mines. The crushers and rolls are placed up on the floor, so that all material has to be lifted by hand when feeding, and (*a*) for sampling matte there are a Blake crusher 15 in. by 24 in., made by Ingersoll-Sargeant Rock Drill Co., Montreal, and Cornish rolls, 15 by 30, made by Jenckes Machine Co., Sherbrooke, Que.; and (*b*) for sampling ores a crusher 10 by 18, Fraser & Chalmers, and rolls, 10 by 18, Jenckes Machine Co. The ore is wheeled to the sampling floor covered by iron plates, and quartered down.

Bins.—Besides the bins at the tramway terminal, there are bins for the coke, iron ore, fluxes, limestone, ore from other mines, and for the mine ore.

Refinery.—This part of the smelter will be included in a 60 by 100 ft. building, 25 ft. to the eaves, and comprises (*a*) a reverberatory calcining furnace, hearth 16 by 50 ft., fuel, wood; and (*b*) a reverberatory smelting furnace, hearth 13 by 17 ft., or

16 by 20 ft., outside measurement, both furnaces being built upon a foundation made by filling in excavations of the proper size with molten slag, and connecting with a 65-ft. stack.

In the smelting furnace it is proposed to reduce the calcined matte to blister copper, or 95% copper, and 2% silver, the fuel to be soft coal.

On blowing out the furnace in September, prior to putting in the removable hearths, a large mass of metallic copper, very rich in silver, was found filling the bottom of the furnace and also eating into the bottom, extending down to the ground by replacing the mortar between the fire bricks and a steel plate with metallic copper. This valuable mass was broken up, after a great deal of trouble, by using dynamite pop-shots, and now several large pieces will be easily handled by being put on the hearth of the furnace before the arch of the roof is turned, and then melted down.

The offices and laboratories are excellent, and with the completion of the additions now being made, the company will possess a very complete and excellent smelting plant, designed and constructed by Mr. Johnson, who has added to his already high reputation, by the success he has met with in his treatment of the Silver King ore, and further—with the mine well laid out and thoroughly equipped, and means of transportation good, this company should be in position to thoroughly explore their property and mine on a large scale.

Fuel.—Both American and European coke are being used, and of the latter quite a large quantity has been imported.

(*a.*) The American coke, from Wilkington, Wash., contains, as nearly all similar coke made from the coal measures of the Cretaceous, a large amount of ash, or 18-19%, and costs delivered at the smelter $13.40 per ton.

(*b.*) The Welsh or Cardiff coke is being delivered at the smelter for $15 per ton, and over 4,000 tons were in stock. In the furnace on an average 11% of this required.

(*c.*) 700-800 tons of Westphalian coke has been imported and landed at the smelter at a little less cost than Cardiff; these cokes having been sent out by sea to Vancouver.

Fluxes.—A very pure limestone, crystalline, is brought down on scows from 9 miles above Kaslo, on Kootenay Lake.

Analyses.—The subjoined analyses of the ore, matte, etc., were kindly given by Mr. Johnson :—

Ore.	1	2	3	4
Insol.	48.00	40.60	40.50	46.50
SiO_2	.....	32.30	29.70	33.70
S.	3.70	4.39	3.00	3.00
Al_2O_3	2.37(?)	12.50	.....	.....
Fe.	6.18	6.92	8.01	8.12
MnO	10.97	9.11	6.80	8.30
CaO	6.40	10.50	7.20	5.70
MgO	1.04	3.56	.....	.....
Cu.	5.06	5.59	4.40	4.30
Ag.	35.05 oz. per ton.	30.00 oz. per ton.	22.08 oz. per ton.	32.00 oz. per ton.

Matte.—A typical matte assays : 175-310 oz. of silver per ton, 45-50% copper.

Analysis :—Cu. 43.0, Fe. 19.7, S. 23.6, As. 0.06, Sb. 0.50, Mn. 4.90, Zn. 1.5, Ag. 1.0, Au. a trace (or .12 oz. per ton).

The analysis of slag shows its very acidic character :—SiO_2 41 to 44%, Al_2O_3 15 to 25%, Fe. 7 to 10%, MnO. 8 to 10%, CaO. 11 to 14%, Ag. .7 to .9 oz. per ton, Cu. .025 to .035%.

Analysis of flue-dust:—Insol. matter, *i.e.*, mineral 33.9, and carbon 7.8, Cu. 6.12, As. 3.2, Sb. 2.9, iron peroxyd. 10.3, CaO. 4.7, MgO. 5.8, Al_2O_3 1.9, S. 9.52, ZnO. 3.1, Mn. traces, and Ag. 37.6 oz. per ton.

Analysis of coke from Fairhaven, Wash.:—Ash. 23.85., S. 0.52., H_2O. 0.35., fixed carbon 75.28.

Transportation.—The C.P.R. has a spur up to the smelter, by which cars can be run to the main line that leads out to Robson, or to the wharf, where the steamers from the Kootenay Lake land,

Custom Smelting.—This smelter has now entered the market at Rossland for the gold-copper ore that can be brought to this point. Also by means of the new furnace with removable crucibles, and especial flues to be erected for the condensation of lead fumes, it is intended to undertake the treatment of the silver-lead ores, and thus make this one of the smelting centres for Kootenay ores.

Output—The following table gives very closely the total production of the mine from the beginning of work to January 1st, 1897 :—

——	Tons.	Ozs. per Ton. Silver.	Copper.	Silver.	Copper.
			%	ozs.	lb.
Amount shipped by former owners	200	190.0	18.7	38,000	74,800
Amount shipped to outside smelters	1,160	119.0	12.9	138,331	299,400
Amount shipped to Company smelter	29,860	21.0	3.7	627,060	2,209,640
Total production of mine..	31,220			803,391	2,583,840

Smelter Returns—Mr. Paul Johnson, superintendent of the smelter, reports that from Jan. 14th to Jan. 1st, 1897, the smelter has been in blast for 255½ days, and that with the one 42 by 100-inch blast furnace there have been smelted :—

ORE SMELTED.

Silver King ore	59,720,335 lbs.	or 29,860 tons of 2,000 lbs.	
Outside ores	542,070 "	271 "	"
Total ore	60,262,405 "	30,131	

PRODUCTION.

	Pounds.		Silver. ozs.	Gold. ozs.	Copper. lbs.
Matte and metallics	4,775,355	containing	628,125	575.2	2,247,891
Flue dust	240,000	"	4,836	2.9	15,030
Totals	5,015,355	"	632,960	578.1	2,262,921

The average value of the ore.—From the above returns the average silver and copper contents yielded per ton, as calculated from the product obtained in smelting nearly 30,000 tons of the Silver King ore are nearly : 21 ounces of silver per ton, and 3.7% copper.

Aerial Tramway.—Hallidie system, 4.4 miles in length, conveys ore from mine, to smelter ; erected at a cost of $50,000, by the California Wire Works Co., San Francisco. This has been in operation during 1896, and has taken away from ore bins at Upper Terminal ore as follows :—

By contractors, prior to June 1st	12,261 tons.
" Company, from June 1st to Sept. 30th	9,839 "
	22,100 "

The tramway, since it was divided into two sections, has worked in a most satisfactory manner, running almost continuously, and delivering as high as 145 tons in the 10 hours, also averaging from the time taken over from the contractors 132 tons daily while in operation.

EXCERPTED FROM DIRECTORS' REPORT FOR YEAR ENDED 30TH SEPT., 1896.

The balance sheet shows a gross profit of income over expenditure of £28,067 6s. 5d., from which it is proposed to write off the sum of £3,807 19s. 9d. for depreciation on buildings, plant, machinery, &c., for the past year, during which the smelting furnace was only 185 days in blast. This profit balance would have enabled the directors to have recommended the declaration of a dividend upon both preference and ordinary shares, but for the debit balance, brought forward from 30th September, 1895, which had first to be met. The balance remaining, however, will suffice to pay the dividend due upon the preference stock, £3,662 8s. 2d., and carry forward a balance of £1,930 6s. 4d. to the credit of the current year, which disposition of this balance the directors accordingly recommend.

The wire tramway was originally constructed to work in one section, but this having been found to cause too great strain upon the rope, the tramway has been divided into two sections, at the cost of the contractors, and has since worked satisfactorily. The ropeway and standards have all been thoroughly overhauled, and put in efficient order, so that it is now confidently relied upon that this means of conveyance will suffice to bring down continuously the present output of say 120 tons a day from the mine to the smelter.

The accounts submitted at last meeting of shareholders are:

INCOME AND EXPENDITURE, YEAR ENDED 30TH SEPT., 1896.

DR.

	£ s. d.	£ s. d.
To Ore in Stock at 30 September, 1895		7,345 16 0
" Ore purchases		1,979 15 6
		9,325 11 6
" Expenditure in British Columbia—		
Mining—		
Wages, Salaries, Stores and General Expenses £24,305 0 9		
Taxes on Ore and Cordwood 259 4 7		
	24,564 5 4	
Smelting—		
Wages, Salaries, Coke, Fluxes, Stores and General Expenses	23,471 13 11	
Office and General Expenses—		
Salaries, Law Charges, Insurance and Miscellaneous Expenses	1,557 18 3	
Interest	609 6 1	
		50,203 3 7
" Expenditure in London—		
General Expenses, including Salaries, Law Charges, Travelling Expenses, Auditors' Fees and Office Expenses	1,564 19 6	
Directors' Fees	812 10 0	
Interest	75 10 2	
		2,452 19 8
" Depreciation—		
Buildings, Plant and Machinery, Tramway, Smelter and Office Furniture	3,807 19 9	
" Balance, being Surplus Income over Expenditure for the year, carried to Balance Sheet	24,259 6 8	
		28,067 6 5
		£90,049 1 2

CR.

	£	s.	d.
By Ore Sales	68	9	6
" Matte Sales	78,933	16	10
" Ore and Matte in Stock at 30th September, 1896	10,850	5	5
	89,852	11	9
" Rent Received	1	0	6
" Assay Charges	21	7	11
" Transfer Fees	173	8	0
" Difference in Exchange	0	13	0
	£90,049	1	2

Capital and Liabilities.

DR.

	£	s.	d.	£	s.	d.
To Share Capital.						
Authorized—						
50,000 Cumulative Preference Shares of £1 each	50,000	0	0			
250,000 Ordinary Shares of £1 each	250,000	0	0			
	£300,000	0	0			
Issued—						
25,000 Cumulative Preference Shares of £1 each, called up	25,000	0	0			
175,000 Ordinary Shares, issued as fully paid	175,000	0	0			
75,000 do do of £1 each, called up	75,000	0	0			
	275,000	0	0			
Deduct Calls in arrear	350	10	0			
				274,649	10	0
" Loan Account				13,888	17	8
" Sundry Creditors				2,135	5	5
" Income and Expenditure Account—						
Surplus Income over Expenditure for the year ending 30th September, 1896, per account	24,259	6	8			
Deduct Balance at 30th September, 1895	18,666	12	2			
				5,592	14	6
" Contingent Liabilities—						
Dividend at 7 per cent. per annum on amounts paid up on 25,000 Cumulative Preference Shares	3,662	8	2			
Directors' Fees	779	5	0			
				4,441	13	2
				£296,266	7	7

Property and Assets.

CR.

	£	s.	d.	£	s.	d.
By Mines Cost Account—						
As at 30th September, 1895	210,931	10	4			
Add Further expenditure during the year ended 30th September, 1896—						
New claims taken up..£556, 1 5						

Prospecting..... 1,152 14 9			
Water rights and development..... 494 17 5			
	2,203 13 7		
		213,135 3 11	
" Buildings, Plant and Machinery—			
As at 30th September, 1895.....	5,203 3 8		
Additions during year ending 30th September, 1896.....	4,323 17 2		
	9,527 0 10		
Deduct depreciation written off ...	1,039 13 1		
		8,487 7 9	
" Tramway from Mine—			
As at 30th September, 1895.....	10,843 12 9		
Expenditure during year ending 30th September, 1896.....	4,892 9 8		
	15,736 2 5		
Deduct Depreciation written off ..	1,573 12 3		
		14,162 10 2	
" Smelter Account—			
As at 30th September, 1895...	2,636 4 6		
Expenditure during year ending 30th September, 1896.	17,928 17 9		
	20,565 2 3		
Deduct depreciation written off ...	1,181 10 11		
		19,383 11 4	
" Lands purchased—			
As at 30th September, 1895.....	411 10 5		
Additions during year ending 30th September, 1896.....	226 6 8		
		637 17 1	
" Office Furniture in London—			
As at 30th September, 1895.....	82 7 3		
Additions during year ending 30th September, 1896.....	49 7 9		
	131 15 0		
Deduct depreciation written off ...	13 3 6		
		118 11 6	
" Stores and tools on hand—			
Per inventories received from British Columbia.....		12,493 13 6	
" Ore and matte in stock—			
Per valuation of Manager in British Columbia		10,850 5 5	
" Open shipments of matte.....		13,324 9 11	
" Sundry debtors.....		229 8 4	
" Cash at bankers and on hand.		3,444 8 7	
		£296,266 7 7	

JACKSON MINES.

Owners:

Robert Jackson, Kaslo. | G. Alexander, Kaslo.

Head Office: R. J. McPhee, Superintendent, Whitewater Station, via Kaslo, B.C.

The claims owned comprise the "Northern Bell," "Kootenay Star," "Dublin Queen," "Ophir" and "Moose Fraction," in all about 180 acres, near Whitewater, Ainsworth Mining Division, West Kootenay, British Columbia. 20 persons employed at date of report. Output of ore in 1896, 500 tons.

KOOTENAY MINING AND SMELTING CO., Ltd.

Registered 23rd August, 1892. Authorized Capital, $30,000, in shares of $25 each.

Directors:

Edwin W. Herrick, *President.*
R. P. Rithet, *Vice-Pres.* | Andrew B. Hendryx, *Treas. or Man.*
Edward N. Peck, *Secretary.*

CANADIAN OFFICE: A. B. Hendryx, Pilot Bay, B.C.

Eastern Office: Newhaven, Conn.

Recording Office: 243 Washington St., Jersey City, N.J.

Formed to transact the business of mining, milling and smelting gold, silver, copper, lead ores, and other ores and minerals in all its branches, at Kootenay lake, in Kootenay Mining District, British Columbia, and in the Territory of Idaho, and in other mining districts of British Columbia and the United States of America; also to purchase, own, work and develop the mines, mining claims and mining property known as the "Blue Bell," "Silver King," "Surprise" and "Black Hawk" lodes, located at Kootenay lake, in Kootenay Mining District, British Columbia; and to purchase, own, work and develop other mines, mining claims and mining property at other places; to own, buy and sell, and deal in gold, silver, copper, lead ores, and orher ores and minerals; also to obtain, buy and own the franchise and property of the toll road from Mud Slough to a point on Kootenay river, near Bonner's Ferry, Idaho Territory, and to maintain and operate the same; to buy, own and hire steamboats and other boats, and to operate the same for the transportation of freight and passengers, etc.

The plant is located on a small peninsulu on the same side (or the east) of Kootenay lake as the mine, but about eight miles south. There are three main buildings, the roast house, smelter and concentrator, besides the smaller ones for offices, laboratories, workshops, etc. The concentrator contains two Blake crushers, 9 x 15 in., four 4-compartment jigs, two double Collum jigs, two 2-table slime table, and two Frue Fanners, and has a capacity of 200 tons of ore per 24 hours. There are four 17 x 65 ft. reverberatory furnaces in the roast-house of 12 tons capacity each per 24 hours, while in the smelter is one 100-ton water-jacketted blast furnace. In the engine room is a 150 h.p. Corliss engine for the concentrator and sampling works, an 85 h.p. engine for the blower, and a 30 h.p. engine for the dynamo, for the electric lighting of the whole works.

The ore is brought down from the mine on large scows and then hoisted up on an incline plane to a point whence it can be taken to any point desired. Mr. Hendryx states (see Minister of Mines Report, 1895):—"Since commencing operations to the finish of the works, July 10th, 1894, to December 31st, 1895, the Kootenay Mining and Smelting Co. has expended in cash for purchase of machinery, labor, ores, etc.,

a sum exceeding $650,000. During the year 1895 the company has employed daily on the average 200 men, and has paid from their office on labor account $170,000; for supplies, $85,622; for duties, $70,000; for freight, $92,500; for ores purchased, over, $150,000."

LAST CHANCE MINING AND MILLING CO.

Incorporated 1896. Authorized Capital, $500,000, in shares of $1.00.

Head Office: Spokane, Wash.

Mines Office: Sandon, B.C.

The claims owned and operated by the Company comprise the "Starlight," "Last Chance," "Starlight Fraction," "Blizzard," and "Little Widow."

There are two small parallel veins running N.E. by S.W., one standing vertical, the other dipping S.E. 50°, and two tunnels 100 feet apart in elevation. The upper tunnel is 240 feet long with cross-cuts and drifts on smaller veins that lead off from the main one, while the lower, a cross-cut tunnel, intercepts the inclined vein at 180 feet, along which drifting has been done for 150 feet, with an upraise to the upper workings. This tunnel was being continued to strike the other vein but had not done so at 100 feet, but it was in the works between these two tunnel levels that the character of the ore and the vein was best seen, as from an incline started down on the vein near the mouth of the upper tunnel, and when about midway between the levels extended as a drift, very high grade ore has been mined where the vein, varying in size from a few inches to three feet of solid, rich silver-bearing galena was found to have, where galena was not solid, a quartz gangue with galena, forming good concentrating ore. Within surface influences the veins have suffered the usual alteration, and rich "carbonate" ore has also been stoped out. While so far most of the work has been directed toward the development of this mine a quantity of excellent ore has been sent down by rawhiding to Sandon, and thence shipped to the smelters, as in 1895, about nine car-loads of ore assaying 166 to 191 ozs. in silver per ton and 71 to 78 per cent. lead, and in 1896 17 car-loads averaging 182 ozs. in silver per ton and 62 per cent. lead were sold. This property is another example of many which have paid for themselves from the beginning, and during 1896 a dividend of $20,000 was paid, after providing for the new mine buildings, more extensive underground work and the purchase of other claims.

LONDON HILL DEVELOPMENT AND MINING CO., Ltd.

Incorporated 1896. Authorized Capital, $150,000.

Directors:

Oliver T. Stone. | Hamilton Byers. | A. Whealer.

Head Office: A. Whealer, Secretary, Kaslo, B.C.

T. G. Proctor, *General Manager.*

Owns and operates the "London," "Third of July," "Pompeii" and the fractional claim "Round-up," situate west of Carpenter Creek, about three miles from the K. & S. R. R., Slocan District, Province of British Columbia.

Near the summit of a ridge two tunnels have been driven, in one of which, over 40 feet long, is a 4-foot quartz vein, carrying grey copper ore and silver sulphides. On the other side of the ridge, 254 feet below the summit, a tunnel 320 feet long is being driven to tap the vein in depth, in which several small quartz veins, traversing the slates and quartzites were cut. Three lots of high grade ore, or about 40 tons, have been shipped, on which the smelter returns were 190 ozs., 267 ozs. and 150 ozs. of silver per ton respectively. As in other veins of this character of ore, there is much 2nd class ore that will have to be milled near the mine, but the method to be adopted will be decided upon after more underground work has been done.

NOBLE FIVE CONSOLIDATED MINING AND MILLING CO., Ltd.

Incorporated August, 1896. Authorized Capital, $1,000,000, in shares of $1.00.

Directors:

John D. Porter. | John G. McGuigan. | J. F. Cutler. | S. S. Titus.
R. M. Sherman.

Head Office: J. F. Cutler, Secretary, Spokane, Wash.

Mines Office: J. G. McGuigan, Managing Director, Cody, B. C.

Owns and operates the Noble Five, Knoxville, Bonanza King, World's Fair, Maud E. Deadman, Wild Goose and Lucetta claims, located about 3½ miles from the town of Sandon, Slocan District, British Columbia. Mr. Carlyle, Provincial Geologist, describes the property as follows:—

Noble Five Vein—On the surface in a rocky gulch scoured by snow-slides, are large croppings of iron rock, which on being broken into is found to consist of galena, blende, and spathic iron, while in the mine the ore is arranged along a smooth, slickensided wall that is sometimes on the hanging and then on the footwall side, in bands arranged in one drift with four bands, *i. e.*, spathic iron, blende, spathic iron, and then galena, with fragments of slate scattered through the ore-shute and spurs of ore running off into the country rock. In the early history of this mine, when the costs and difficulties of shipping were excessive and changes of management often, small drifts were run in on the ledge and the ore extracted in an unsystematic manner, but under the new management the property is being developed in a thorough manner, and the mine placed in a proper condition for its best development and most economical working. On the most southerly claim, the Noble Five, a tunnel 65 feet long and short cross-cuts were driven, resulting in the finding of some good ore, but as this was a dangerous place for snow-slides this work has not yet been extended to prospect this part of the vein. On the Knoxville and Bonanza King has been done most of the mining, consisting at the time of visit (August 18th) of tunnels aggregating 1,380 feet in length and opening up the vein vertically to a depth of 600 feet. In these workings but little high grade ore was left in sight, although much ground re-

mained to be prospected, but there were stopes 6 to 8 feet wide, while the amount of concentrating ore exposed, consisting mostly of galena in decomposed material, was considerable, and in some of the drifts, 7 to 9 feet wide. The mine was not in a condition at that time to show up or do justice to this large and strong ledge, but the three main tunnels to be run and connected by winzes will put this property on a proper working basis. About 200 feet below these workings the main tunnel has been started in a place perfectly safe from slides and cross-cutted to the vein which on the surface at this point had a strong out-crop of galena. This tunnel will be extended well into the mountain along the vein and connected with the upper tunnels, thus enabling all ore to be brought down to the mouth of this main level, where will be the ore-bins at the head of an aerial rope-tramway, 6,100 feet long, vertical drop 2,100 feet, now being built to the concentrator at Cody.

On the Deadman and Wild Goose claims are several large dykes and tongues of "porphyry," and the Deadman vein is about 400 feet east of the Noble Five vein and parallel to it. No work is being done in any of the three tunnels; in two of which that were entered but little ore had been left in sight, but several faults were in evidence. Ore has been shipped for three years from this vein, or 26 car-loads in all, of ore that assayed 63 ozs. in silver per ton and 15% lead for the "carbonates," and up to 255 ozs. of silver per ton and 69% lead for the solid galena ore.

Concentrating Plant—A flume brings water from Cody Creek, and in the conveyance of ore from the mine automatical devices have been introduced throughout. At the main working tunnel of the mine bins of 600 tons capacity automatically discharge into the buckets of the Finlayson double rope tramway, and at the lower terminal the ore drops into the bins of 260 tons capacity, and thence automatically to the 9 x 15 in. rock crusher, and thence to the mill. The capacity of the tramway will be 20 tons an hour. The machinery for the mill has been purchased from the E. P. Allis Company, of Milwaukee, Wis., and the first-class ore and concentrates will be loaded into the cars of the K. and S. R. R., which has a branch line running to Cody.

NORTH STAR MINING CO., Ltd.

Registered 9th May, 1894. Authorized Capital, $100,000 in shares of $1.00.

Directors :

D. D. Mann, Montreal, *President.*
J. M. Browning, Vancouver. | E. P. Davis, Vancouver.

Head Office : Vancouver, B.C.

Mines Office : N. O. Curran, Manager, Fort Steele, B.C.

The property owned by this company comprises the "North Star," "O.K.," "Dreadnaught," "Buckhorn," "Rowan," "Daffodill," "Cromarty," "Notre Dame," "Dorval," "Maverick," "Good Luck," "Canton," "Full House," "Brandon," "Stemwinder" and "Ontario" mineral locations, situated near Fort Steele, East Kootenay, British Columbia.

The Ore—(*a*) Is primarily a very clean, solid, argentiferous galena, rather fine-grained, with only a small amount of zinc blende, while underlying it along the foot-wall is the "iron-ore," or iron and manganese oxides, assaying about 20 ozs. in silver per ton. The assay value of the ore as per smelter returns is :—

Silver, 23.5 ozs. to 45.3 ozs. per ton ; lead 53 to 68 per cent.

(*b*) The upper part of the ore-shute has been decomposed to a mass of reddish brown black and yellow oxides and carbonates of iron and lead, with beautiful specimens of moss-like metallic silver and crystals of cerussite. There is a large amount of this ore, and unlike the "carbonate ore" in the Slocan, it carries a higher silver value than the crude or solid galena ore, the values from smelter returns being :—

Silver, 52 to 60.8 ozs. per ton; lead, 49 to 57 per cent.

In shipping ore a mixture is made of both kinds of ore and then sacked in jute sacks (made in Montreal) so that 16 sacks of the ore weigh one ton, and this is not low grade ore by any means, as is shown by the smelter returns on between two and three thousand tons sold during the past season, when the net or yield values averaged per ton :—

Silver, 30 ozs.; lead 55 per cent.

The large size of the ore body is shown in the mine workings. Shaft No. 1 was sunk 67 ft., and at 30 ft. a short cross-cut to the west entered the ore, and along this level for a distance of 290 feet north and south a solid body continues, with fine ore in both breasts of the drift, with a thickness of 8 to 20 feet of ore, consisting of solid galena overlaid by decomposed or "carbonate" ore, which in one place was fully 15 ft. thick. Along the dip this shute is known to be continuous for a width of 40 to 60 ft., and a large amount of ore now stands ready to be broken down. A cross-cut tunnel, 300 ft. long, strikes this shaft at a depth of 60 ft., and continues west in barren ground 90 ft., the rock in the tunnel to the east, *i.e.*, in direction of the dip of the lode from a point 25 ft. from the shaft changing from its very hard, solid character to a soft decomposed material with no ore, but at 105 ft. east of the shaft the tunnel passed through a body 1½ to 3½ ft. wide, strike north and south, dip east 60°, of soft yellow-coloured material, assaying 20 to 25 ounces of silver per ton, with no assay made for lead. Shaft No. 2, sixty-five feet north of No. 1, is sunk to the main work level, and then follows down the foot wall for 22 ft. along which the ore-body is 6 to 8 ft. wide.

Contracts for the shipment of 7,000 tons to American smelters have been entered into at date of report.

OTTAWA AND IVANHOE SILVER MINES, Ltd.

Incorporated 1896. Authorized Capital, $1,000,000, in shares of $1.00.

Directors:

S. H. Fleming, C.E., *President.*

J. Fred Ritchie. | G. P. Brophy. | J. K. Clark. | P. G. Nash.

Head Office: P. G. Nash, Secretary-Treasurer, Rossland, B.C.

Owns and operates the Ottawa and Ivanhoe mineral claims, comprises 104 acres, on Wellington Mountain, Slocan District, Province of British Columbia. Being opened up at date of report.

PAYNE GROUP.

Owners:

A. W. McCune, and others.

Mines Office: Three Forks, B.C.

The property comprises the "Payne," "Mountain Chief," "Maid of Erin" and "Two Jacks" mineral claims, situate about three miles east of the town of Three Forks, Slocan Mining District, Province of British Columbia. The workings are described in Mr. Carlyle's report for 1896, as follows: The Payne was the first location made in the Slocan District, and the locators believing the trend of the vein would follow the

strike of the country rocks as at Ainsworth, put in their stakes accordingly, and in reality made their location across the vein. Until lately this ground had been opened up by Mr. Bailey, and on the Payne a tunnel had been run in for over 300 feet, with ore continuous for nearly all that distance, the vein strike, N. E. by S. W., having a quartz gangue, but with a maximum width in parts of solid high grade galena of three feet. Substantial mine buildings were being erected at this tunnel mouth, to supplement those already built, and on the Maid of Erin, to the south, a tunnel lower down had been begun and extended into the Payne claim. To the north of this claim, on the Mountain Chief, tunnels had also been run in on the vein, and ore stoped out to the grass roots, but the main mining operations will be conducted from the southern side of the mountain, on which slope is a fair amount of timber suitable for mining purposes; fires having destroyed most of the wood supply. It is reported that over (Sept., 1896) $100,000 worth of ore has already been sold from this vein, the carbonates assaying 80 to 100 ozs. silver per ton, and 35 to 40 per cent. lead, and the galena ore 175 ounces of silver and 70 per cent. lead, or an average net value on all ore sold of over $100 per ton."

RAMBLER AND CARIBOO CONSOLIDATED GOLD AND SILVER MINING CO., Ltd.

Incorporated 20th May, 1896, Authorized Capital, $1,000,000.

Officers:

J. B. McArthur, Rossland, B.C., *President.*
A. L. McClaine, Kaslo, *Secretary.* | Richard Shea, *Mine Superintendent.*

Mines Office: Kaslo, B.C.

Owns and operates the Ramber, Cariboo, Antelope, Tiger and Best fraction claims, near Kaslo, in the Slocan District, Province of British Columbia. Mr. Carlyle, in his report to the Minister of Mines, describes the property as follows:—

"Although the ground embraced within the limits of this property has hardly yet begun to be prospected, two different series of veins have been discovered and are being worked. The veins first found were two quartz veins in the same granite as the Best, with the same character of ore, but when building a trail a narrow streak, a finger-width of red and brown iron oxides, betrayed the existence of a typical silver-galena vein, running through the Slocan slate series and porphyry, close to the contact with granite area, and since following this streak three feet of solid high grade ore have been found in one of these tunnels. Galena ore in good quantity has been found in other veins on which a little work had just been done, and every indication pointed to the high value of this property.

(A.) *Veins in the Granite.*—About half way up the slope of the ridge of the granite, two strong quartz veins 200 feet apart, traceable to the summit 4 to 500 feet above, had been entered by two tunnels, and the strike of each was about N. 20° E., by S. 20° W., nearly at right angles to Best veins, a short distance away. In one tunnel, 20 feet along the vein, dipping easterly 70°, consisted of a very white crystalline quartz, with druses, 3 to 20 inches wide, with parts of the vein strongly impregnated with grey copper and jamesonite, and in the other tunnel, 75 feet long, the vein, dipping easterly 40° to 50°, was continuous, with a width of 2 to 20 inches of very fine looking tetrahedrite or grey copper ore from a small slope in which, it was stated, 18 tons shipped to the Pilot Bay smelter had assayed 499 ounces of silver per ton, $7.50 in gold, and 2 per cent. copper. No work was being done on these veins at time of visit, but large and commodious cabins, ore-house, etc., were being erected, there being a good supply of large timber in the basin.

(B.) *Silver Lead Veins.*—The vein material mentioned above had been traced on the surface for over 400 feet by cuts, and tunnel No. 1, after being run as a cross-

cut for 78 feet through porphyry and slate, had been drifted for 30 feet (Sept. 6th) along a vein of solid galena ore, in places a few inches wide, in others 12 to 24 inches, and at one point in the drift there were two bands of galena along what made the walls of the drift, with crushed country rock between. Along the planes of bedding and fracture in the rock there were iron pyrites and galena, and the country rock was impregnated with pyrites. In tunnel No. 2, 170 feet long and 50 feet above and and 115 feet beyond the face of No. 1 drift, the vein varies from 3 to 4 inches to 2 and 3 feet in width, but at the face the ore was scattered through the country rock. On the ridge a small tunnel exposed 2 feet of solid ore, of which 15 tons had been piled outside, and this vein appeared to be traceable for several hundred feet to some stopes made by some leasers in 1893 on the Antelope ground on the slope of the ridge overlooking the Dardanelles basin. Although these stopes were badly caved in, the vein was seen to be lying very flat, with two to three feet of mixed ore, and in one place two feet of solid galena ore, and during the present winter this vein will be properly prospected and put in shape for mining.

The galena ore shipped, as per smelter returns, has yielded from 79.6 to 273.3 ounces of silver per ton, and 31 to 64 per cent. lead, one lot of 27 tons netting $185.12 per ton, while the carbonate ores, running 22½ per cent. lead, assayed 166 to 178.5 ounces per ton of silver. Ore shipments will be sustained, and it was proposed to extend the Washington waggon road *via* the Best up to the mine, to greatly facilitate the export of the mine output, and it is now reported that this has been done.

RECO MINING AND MILLING CO., Ltd.

Incorporated 10th November, 1896. Authorized Capital, $1,000,000. Dividends paid, $180,000.

Directors:

J. M. Harris. | F. T. Kelley. | S. M. Wharton. | G. C. Wharton.
E. R. Atherton.

Head Office: J. M. Harris, Managing Director, Sandon, B.C.

F. T. Kelly, *Secretary-Treasurer.*

Owns and operates the "Ruecau," "New Denver," "Clifton," "Texas," and "Ephraim" mineral claims in the Slocan District, British Columbia.

Two distinct silver-lead veins are being worked *i. e.* (1) Big vein and (2) the Small or Goodenough vein, and in all probability veins lying in contiguous claims will be discovered, on prospecting, to extend into this territory. This mine affords another example of the opening up and development, and the purchase of other claims without any capital save that got in mining, from the beginning of work, of rich ore. On the Big vein have been run three tunnels, from which has been taken most of the ore extracted from this lead, save that from one small stope that yielded over $16,000; and in tunnels Nos. 1 and 3, the former 650 feet long, and the other 900 feet long, connected by a raise 125 feet long in the vein; the veins consist mostly of decomposed vein matter, in places a few inches wide, in others several feet. Work on this vein so far has been confined to purely development during the past year, but in 1895, four carloads of galena, the ore yielded on an average 178.8 ozs. silver per ton, and 71 per cent. lead (smelter returns.) While the carbonate ore, or nine carloads, yielded from 89.3 to to 161.6 ozs. ozs. silver per ton, and 23.2 to 37.1 per cent. lead.

From the Small or Goodenough vein, lying several hundred feet to the east, has come the richest silver-bearing galena yet found in Kootenay, the silver evidently occurring as argenite, although much ruby silver is found in some of the solid galena. The mining operations are being carried on in co-operation with the Goodenough

mine, and three tunnels, Nos. 2, 4 and 6, have been driven to and then extended both ways along the vein in each of these properties; the vein being from two to three inches wide up to 20 inches of solid ore, with in places only a narrow streak of iron-stained matter. The ore so lies that generally the ground can be mined out along it, leaving the ore to be afterwards broken down clean. The ground is faulted in one place with a lateral throw of the vein for 10 feet, and where the vein passes through the prophyry dykes the ore shute is found, generally, to be about the most productive part of the vein. From these tunnels several hundred feet of drifting have been driven, the vein being not always productive, but in the miners' term "in and out," and these levels will be continued much further before reaching the limits of the claim.

This ore, while mined from a small vein, is very profitable, and in August, several tons of rich ore were piled at each tunnel mouth, and the following data from smelter returns will give some idea of the value: The galena ore has run from 225 to 730 ounces of silver per ton, and 67 per cent. lead; one lot of 21 tons assaying 730 ounces of silver per ton, and 67 per cent. lead; and two shipments in 1896, or 45 tons, yielded net (or 95 per cent. of assay) 24,820 ounces of silver, and 27 tons of lead, or $340 per ton, after deducting all charges.

The carbonate ore from this vein, for 20 carloads, has yielded from 230 to 337.8 ounces of silver per ton, and 19 to 28 per cent. lead

At date of report a concentrator, of a capacity of 120 tons, and a wire rope cable-way had been contracted for.

RUTH MINES.

Owners:

H. W. Forster, M. P., London, Eng. | G. Alexander, Kaslo, B. C.

Head Office: H. B. Alexander, Manager, Sandon, B. C.

The claims owned comprise the "Ruth," "Ruth Fraction," "Hope," "Despair" and "Wyoming," embracing about 200 acres, and situate near Sandon, in the Slocan Mining District, British Columbia. Average size vein worked, 2 ft. to 6 ft., yielding about $100 to the ton. Opened by four tunnels; 90 persons employed. Output in 1896, 2,500 tons.

SILVER KEY MINING CO., Ltd.

Incorporated 27th November, 1895. Authorized Capital, $100,000, in shares of $1.00.

Directors:

C. M. Getting. | George Long. | Jas. Gilhooly.

Mines Office: George Long, Managing Director, Three Forks, B. C.

Owns and operates the "Silver Key" mineral claim, situated on the North Fork of Carpenter Creek, about 2½ miles from the town of Three Forks, Slocan District, Province of British Columbia. Average size of vein worked, 3 ft., yielding about $100 per ton. Opened by two tunnels, in at date of report 90 and 37 ft. respectively.

SLOCAN MILLING CO., Ltd.

Incorporated 1894. Authorized Capital, $1,000,000, in shares of $10.00.

Directors:

A. E. Humphreys, Duluth. | N. D. Moore, New Denver, B.C.
W. C. Yawkey. " | John Vallance, " "
W. H. Yawkey.

Head Office: Three Forks, B. C.

Formed to work mines and carry on the business of milling ores in the Slocan District, Britlsh Columbia. Present capacity, 190 tons daily.

STAR MINING AND MILLING CO., Ltd.

Incorporated 5th October, 1896. Authorized Capital, $1,000,000.

Directors:

J. M. Harris. | F. T. Kelly. | A. T. Riley. | M. L. Grimmett.

Head Office: J. M. Harris, Managing Director, Sandon, B. C.

M. L. Grimmett, *Secretary-Treasurer.*

Owns and operates the "Rabbit Paw" and "Heber" mineral claims, comprising 40 acres, near the town of Sandon, Slocan Mining District, Province of British Columbia. Being opened by tunnel at date of report.

WASHINGTON MINES.

Owners:

J. L. Montgomery, New York. | J. L. Retallack, Kaslo,
and others.

Mines Office: Kaslo, B.C.

The property is situated near the town of Kaslo, Slocan Mining District, Province of British Columbia. Vein from 3 to 12 feet worked. Mr. Carlyle, in his report, says: "In the upper tunnel, No. 1, 77 feet long, there was considerable mill ore, but most of the ore came from tunnel No. 2, 200 feet below and 275 feet long, over which was a large stope 150 feet long and 30 feet high, with a good quantity of concentrating ore in sight, which on being broken was sent down to tunnel No. 3, 300 feet long, in which the ore-shute is much smaller and completely cut off at the face by a fault not yet explored. From the mouth of this tunnel-level the ore passes down through a shute 180 feet long, to a 3-rail gravity tramway, 1,450 feet long, which leads to the shute down to the strong log ore-bins of the concentrator, where an excellent waggon road—one of the best seen in West Kootenay—three miles long, runs to McGuigan's siding on the K. & S. R. R.

The mill was first built in the Slocan, by Mr. T. L. Mitchell, who used machinery most made in Canada. It has a daily capacity, when water is sufficient, of 50 tons of ore, and the ore, after passing through a 4 x 10 inch Blake crusher into the supply bin, is automatically fed to the coarse rolls, and thence elevated to the revolving screen which make three sizes. (*a*) The smallest screened material is further sized to three sizes by an hydraulic classifier, each of which passes to one of the three fine Hartz jigs, while the overflow of the classifier runs into a V-shaped settling tank, and the settlings of which are drawn off into a double round slime-table, the middlings from which pass to elevator No. 1, into the trommel, and then to classifier again; (*b*) Of the 2nd and 3rd sizes of the revolving screen, and the refusal or the product passing out at the lower end of the screen, each passes to one of the three coarse Hartz jigs, the middlings from which go to coarse middling rolls, and then back by elevator No. 1. The middlings from the fine jigs pass to fine set of rolls, and also to Elevator No. 1. The clean concentrates pass into concentrator bins, which drain into settling tanks to save the slimes, and all shipping material is sent down the hill in sacks.

The crude ore or unconcentrated galena assays from 108 to 136 ozs. of silver per ton, and 66 per cent. lead, and during the past year, the concentrates, of which 50 to 60 carloads have been shipped, yielding 95 ozs. silver per ton, and 60 per cent. lead. As the water supply for the mill is for some months precarious, or only available for half of the year, and for the last season even less than that, it has not been feasible to pursue mining operations to that extent otherwise possible, but the development work will be done in the meantime, as there is a good site for another tunnel on the lead below the present No. 3.

WELLINGTON SILVER MINING CO., Ltd.

Incorporated 1896. Authorized Capital, $300,000.

Directors:

W. A. Allan, Ottawa, *President.*

Wm. McNally, Montreal.
J. W. McRae, Ottawa.
Geo. P. Brophy, C. E., Ottawa.
Harold Kennedy, Quebec.
Sandford H. Fleming, Ottawa.
Hector McRae, Ottawa.

Head Office: Queen Street, Ott wa.

Mines Office: Kaslo, B. C.

Formed to acquire and work the "Wellington," "Metis," "Blucher," and "Bolderwood" mineral claims, comprising 175 acres, and situated on Wellington Mountain, about 20 miles from the Town of Kaslo, Slocan District, Province of British Columbia. On the "Wellington" are two veins in the Slocan slates, one striking N. 50° E. and dipping 60° southerly, and on the other dipping north, described by Mr. McConnell, of the Geological Survey, as a "wide crushed zone, traversing the slates in an east and west direction. The crushed slates hold stringers and pockets of quartz, spathic iron and calcspar." A cross-cut tunnel 170 feet long taps the vein at 40 feet in depth, and an 800 foot cross cut tunnel intersects the south-dipping vein at 550 feet at the 200 foot level, along which the vein dipping north so far has not been found, although it is now being followed down towards this level. The works are all connected on the south vein from the 200 foot level; up in the 140 foot drift the north vein is intersected. At present the ore is being mined from both veins, but the highest grade ore comes from the vein dipping north. The mine is about two miles from the siding on the K. & S. R. R., and ore is packed down half way by the trail, and half way by by waggon road. The ground is very soft, requiring little or no powder, but the timbering, as in the Whitewater, must be constantly kept up to the face of work.

From a copy of the smelter retuns, the ore, which occurs both as the carbonate and the galena, with grey copper and zinc blende, in which is found good silver value, has assayed from 125 to 328 ounces silver per ton in carload lots, and 10 to 55 per cent. lead, the average for 400 tons shipped being 173 ounces silver and 30 per cent. lead. Number of men employed, 24. During the year 1896, twenty-five lots of ore have been shipped, and the mine has been put in excellent condition for mining and further development.

WHITEWATER MINES.

Owners :

J. C. Eaton. | J. L. Retallack. | J. L. Montgomery. | W. C. Pierce.

Mines Office : J. C. Eaton, Superintendent, Whitewater, B.C.
(Kaslo & Slocan R'y.)

The property comprises the "Whitewater" and "Irene," mineral claims, about one mile north of Whitewater and 18 miles west of the Town of Kaslo, Slocan Mining District, Province of British Columbia. On the surface the vein has been disclosed for 800 feet, and from strippings several carloads of good ore have been shipped from the crushed mass of shale and iron oxides and yellow carbonates, copper stained by the decomposed tetrahedrite. In the mine the uppermost tunnel, No. 00, had been driven in 30 feet along the much decomposed vein, and ore was being piled up at the mouth. Tunnel No. 1, 260 feet below No. 00, had been driven west along the vein for 130 feet, but with little ore. In tunnel No. 2, 400 feet long, 75 feet below No. 1, with 45° dip, three or four carloads of ore were extracted from a small stope near the entry and beyond this the vein was almost barren for 340 feet, when the ore shute widened from six inches to six feet of solid ore, and in the face, beside the carbonate ore, were 6 to 12 inches of solid steel galena. Tunnel No. 3, 96 feet on the dip below No. 2, had been extended 425 feet, with 4 to 10 inches of continuous ore for 200 feet, when in a cross-cut, running both ways, was a mass of barren crushed shale about 20 feet wide, with a band of steel galena along either boundary of this zone. At the face the ore shute was small, but the solid mass of spathic iron was three to five feet wide. Near the mouth of this tunnel $1,000 worth of ore was taken from a narrow streak of carbonate ore in driving 40 feet, and a winze had been sunk 15 feet to a short tunnel following good ore, and then 70 feet farther, with two to four feet of very high grade ore for 40 feet of galena, varying from very fine to the coarsely crystalline and carbonate ores. In tunnel No. 4, 104 feet on the dip below No. 3, the heading was in 175 feet, and in the face was a solid band of spathic iron two feet wide on the regular dip of the vein, with a finely crushed mass of black slate and shale on either side. In a stope 40 feet long, and up one set above the drift, there were 6 to 12 inches of the steel galena, and then coarse broken galena, as if shattered by movement since deposition.

Six lots of ore sent from this vein was the first sent out of the Slocan, *via* Kaslo, and in the early days it cost $100 per ton before any returns were received. Much of the ore shipped is of the "carbonate" class, and the silver value ranging from 72 to 298.5 ozs. per ton, the lead from 11 to 30 per cent., while the galena ore yielding 35 to 65 per cent. lead, assays in silver from 75 to 362.6 ounces per ton, or an average on the whole out-put of the mine for 1896 of 114 ozs. per ton, and 30 per cent. lead. This ore carries from 16 to 17 per cent. zinc, and the smelter charges vary from $9 to $13 per ton—$9 if the lead is below 20 per cent.; the cost of the freight being $1 per ton to the railroad, and $11 to the smelter.

WONDERFUL GROUP MINING CO., Ltd.

Incorporated 1896. Authorized Capital, $1,000,000.

Head Office: H. C. Bell, Secretary, Spokane, Wash., W. W. D. Turner, President.

Mines Office: E. J. Field, Manager, Sandon, B.C.

Owns and operates the "Wonderful," "Lookout" and "Columbus," situate near the town of "Sandon, in the Slocan Mining District, Province of British Columbia. Mr. Carlyle, in his report to the Minister of Mines, thus describes the operations on the property: "The property had been under bond to Jno. A. Finch, who had done over 2,000 feet of underground work, mostly along the supposed course of a vein, but with not very successful results, only two carloads of ore being shipped from these workings in 1895. Ore was found scattered through the wash and the much shattered slates near the surfnce, so the company decided to prospect the claim by bringing water from one of the small streams in a small flume, and then letting it cut its way down through the wash to bed-rock as it rushed down the mountain side to Miller Creek. Water was turned on June 18th, and it was found that pieces of galena ore were being left in the bottom of the cut, and this prospecting then developed into hydraulic mining, the water being allowed to run for several hours, when there would be a "clean-up" of tons of high grade ore, with the result that over $25,000 were thus won. As the work proceeded it was seen that the mineral-bearing wash or débris was not more than 100 to 120 feet wide, while the real "pay dirt" had a much less width than this, and as the channel cut down it left on either side country rock apparently in place. In the pay dirt there was not only the solid ore but decomposed mineral, all of which of course was swept away, only the boulders of galena, with all the surface decomposed, remaining; one of solid galena weighing over 13 cwt. While some believed that the ore had been brought down from a vein higher up on the mountain side, the fact that this ore was found only in a narrow channel, and that immediately above the slope of the mountain ran back with a gentle rise, led to the belief that the washing was being done very close to the vein, if not immediately above it, and this conclusion then arrived at has apparently been confirmed in that this washing is now reported by the manager to have disclosed the solid vein in place, with a strike S.W. and N.E., and regular underground mining has been begun.

A good wide track or trail, 7,500 feet long, was built from the mine to Sandon, and the ore is packed out to the railroad, the ore assaying from 113 to 133 ounces of silver per ton, and 70-76 per cent. lead, and Mr. Field has succeeded not only, as he claims, in uncovering the vein by this method of prospecting, but has recovered 400 tons of first class ore from the débris.

Supplementary List of Silver Mining Companies

Bear Lake Consolidated Mining Co., Ltd.— Registered 1894. Authorized Capital, $500,000, in shares of $5.00. Directors: George Riley, Gustav Leiser, Gordon Hunter. Head Office: Victoria, B. C. Formed to acquire and work the Snowshoe mineral claim, in the Slocan Mining District, West Kootenay, B. C.

Blue Bird Mining Co.—Mines Office: — Taylor, Manager, Kaslo, B.C. Owns and operates the Blue Bird silver lead claim on the South Fork of Carpenter Creek, Slocan district, Province of British Columbia.

Carbonate Mountain Mining and Milling Co., Ltd.—Incorporated 29th August, 1891. Authorized Capital, $100,000. Directors: E. E. Rand, H. Abbott, E. Whetham, J. McQueen. Head Office: E. E. Rand, Managing Director, Vancouver, B.C. Owns the "Southern Cross," "Diamond E." and "Number One" claims in the Kootenay District, Province of British Columbia. The ores carry silver, galena and copper.

Carbonate Silver Mining Co., Ltd. — Capital, $1,000,000. Shares $1 each. Trustees: William G. Johnson, Albert H. MacNeill, A. F. Corbin. Head Office: Rossland, B.C. Formed to purchase the "Carbonate Mineral Claim," situate on Spring Creek, in the Ainsworth Mining Division of West Kootenay District, in the Province of British Columbia, either for money or fully paid-up shares of the Company, and to prospect, work, explore, develop and turn to account the said mineral claim.

Cariboo Creek Mining Co., Ltd.—Incorporated 19th June, 1889. Capital Stock, $50,000. Directors: David Woolsey, A. J. Smith, Thos. Forrest. Head Office: David Woolsey, Illecillewaet, B.C. This Company owns and operates the "Maple," "Quebec" and "Corona" claims in the Illecillewaet sub-division of the West Kootenay Mining District, Province of British Columbia.

Cumberland Mining Co., Ltd. — Incorporated 1895. Authorized Capital, $500,000 in shares of $10. Directors: N. D. Moore, W. H. Yawkey, W. C. Yawkey. Head Office: Three Forks, B.C. Owns and operates the "Cumberland" silver claims at Twin Lakes Basin, in the Slocan District, British Columbia.

Eureka Concentrating and Mining Co. — Incorporated 1895. Authorized Capital, $500,000. Directors: John M. Burke, S. Rosenhaup, J. B. Jones, H. L. Wilson, G. W. Dickenson, Ross Thompson, O. D. Garrison. Head Office: Spokane, Wash. Mines Office: Kaslo, B.C. Formed to carry on mining operations in the Province of British Columbia.

Galena Farm Mining Co., Ltd.—Capital, $100,000, divided into 1,000,000 shares of 10 cents each. Head Office: Vancouver, B.C. Directors: G. F. Burpee, H. Wheeler and A. Wheeler. Formed for the purpose of mining in British Columbia.

Kaslo Development Co., Ltd. — Capital, $500,000. Shares $1.00 each. Trustees: J. E. Bigham, G. O. Buchanan, J. H. Bowes. Head Office: Kaslo, B.C.

Kaslo-Slocan Development Co., Ltd.— Capital, $1,000,000. Shares $1.00 cents each. Trustees: Daniel J. Munn, David W. Moore, Neil F. Mackay. Head Office: Kaslo, B.C.

Kokanee Creek Mining and Milling Co., Ltd.—Capital, $250,000. Shares 25 each. Trustees: J. T. Tipping, T. L. Jenks, W. K. Leighton, A. D. Williams, D. C. McDonald. Head Office: Sandon, B.C.

Lucky Boy Mining, Milling and Development Co.—Organized 8th November, 1895. Directors: Wm. Palmer, J. S. Palmer, H. J. Warner, M. Krackenberg, D. F. Storbeck, W. W. Warner. Mines Office: W. W. Warner, Manager, Ainsworth, B.C. Owns and operates twelve mineral claims in the Ainsworth District, Province of British Columbia, upon which development work is proceeding.

Montreal and Kootenay Mining Co., Ltd.—Incorporated 1891. Authorized Capital, $20,000. Directors: E. B. Greenshields, President; P. A. Peterson, F. Fairman, Edwin Hanson, R. T. Hopper, R. Wilson Smith, W. M. Ramsay. Head Office and Managing Directors: R. T. Hopper & Co., 314 Board of Trade Building, Montreal, Que. Formed to acquire and work mines in the Province of British Columbia and elsewhere in the Dominion. The company owns the "Tam-o-Shanter" and "South Tam" mines, situated at Hendryx camp on the east side of Kootenay lake, opposite the town of Ainsworth, B.C. Samples of the ore taken out from the different workings run from 80 to 480 ounces of silver. A sample car-load from the surface workings treated by the Tacoma Smelting Co., ran 82$\frac{3}{10}$ ounces to the ton.

Mountain Chief Mine.—Owner: Geo. W. Hughes, Kaslo, B. C. The property is located on Carpenter Creek, Slocan District, Province of British Columbia. Shipments in 1893-94-95 averaged 130 ounces of silver and 70 per cent. of lead. Being developed.

Mount Mabel Mining and Smelting Co., Ltd.—Incorporated 1896. Capital, $1,500,000 divided into 1,500,000 shares of a value of $1.00 each. Directors: A. J. Hughes, A. St. Clair Brindle, New Denver, B.C., A. R. Code, Souris, Man. Formed to acquire the mineral claims known as the "Glenwood," "New Brunswick," "St. George," "Mabel May" and "Star of Hope," situate on the divide between Finnell and Ten Mile Creeks, in the Slocan Mining Division of West Kootenay.

Neosho Mining Co.—Incorporated under the laws of the State of Washington, 19th Sept., 1891. Authorized Capital, $50,000, in shares of $10, with power to increase to $1,000,000. Directors: F. H. Coe, L. R. Dawson, J. K. Basye, I. P. Taylor, M. W. Wallace. Head Office: I. P. Taylor, 210 and 211 Jesler Building, Seattle, Wash. This company owns and operates four mineral claims carrying silver and carbonate ores, near Hot Springs, West Kootenay District, Province of British Columbia. Assays of the ore vein worked have given as high as 237 ounces to the ton. Shaft sunk 165 ft.; 235 ft. of drifts to date. Estimated value of machinery, plant and buildings at 31st Dec., 1894, $5,000. No report for 1895-96.

'97 Mining and Milling Co., Ltd.—Capital, $1,000,000. Shares $1.00 each. Trustees: Jno. T. Moore, Daniel Boyd, L. H. Bowman. Head Office: Sandon, B.C. Formed to acquire the mineral claims known as the "N.P.," the "Alma No. 3," the "Animon" and "No. 3," situated on the North Fork of Carpenter Creek, in West Kootenay Mining District.

Ocean Mining and Milling Co., Ltd.—Capital, $500,000. Shares $1.00 each. Trustees: C. D. Rand, R. E. Leonard, George L. Fowler. Head Office: Sandon, B.C. Formed to acquire and work the mineral claim "Ocean," situated on Bayne Mountain, near Three Forks, in Slocan District, British Columbia.

Roulette Mining and Milling Co., Ltd.—Capital $1,000,000. Shares $1.00 each. Trustees: John Vallance, N. D. Moore, M. W. Bruner, H. A. Ross. Head Office: New Denver, B.C. Formed to purchase the "Roulette," "Banshee," "Rebound," "Mountain Lily" and "Lucky Move" mineral claims, situate on the North Fork of Carpenter Creek, in the Slocan Mining Division in the County of Kootenay, and any other mineral claims in the said Mining Division or elsewhere in the Province of British Columbia.

Sandon Mining and Milling Co., Ltd.—Capital, $1,250,000. Shares $1.00 each. Trustees: Peter Leclair, Adolph H. Blumenauer, John H. Starkey. Head Office: Sandon, B. C. Formed to purchase the "Sunrise" and "Mascott III" mineral claims situate near Sandon, in the Slocan Mining Division of the District of West Kootenay, in the Province of British Columbia.

Selkirk Mining and Milling Co., Ltd.—Capital, $250,000. Shares, 25 cents each. Trustees: Jethro A. Smith, Martin L. Grimmett, George A. Love, Thomas Brown, G. H. Wright, Henry A. Smith. Head Office Sandon, B.C. Formed to purchase the Little Estella Fraction, Gracie, Minnie, Tornado and Hope mineral claims, situate in the Slocan Mining Division of the District of West Kootenay, in the Province of British Columbia.

Silver Band Mining Co., Ltd.—Incorporated 1896. Capital, $250,000. Divided in 1,000,000 shares at 25 cents each (25c.). Directors: E. B. Marvin, J. G. Cox, C. J. Kelly, J. L. Forrester, F. F. Hedges, F. W. Adams, of the City of Victoria, and E. F. Smith, of Kaslo, B.C. Head Office: 74 Wharf St., Victoria, B.C. Formed to acquire the mineral claim known as the "Silver Band Mining Claim" situated on Eight Mile Creek, on the East Side of Slocan Lake, in the District of Kootenay, and to carry on mining operations elsewhere in the Province of British Columbia.

Silver Bear Mining and Concentrating Co., Ltd.—Capital, $1,000,000. Shares $1.00 each. Trustees: W. Hanson, C. O'Brien Reddin, C. F. Jackson. Head Office: Rossland, B.C. Formed to purchase the "Silver Bear "mineral claim, situated in the Ainsworth Mining Division Division, in the District of West Kootenay, British Columbia.

Silver Hill Mining Co., Ltd.—Capital, $500,000. Trustees: A. J. Andrews, Archibald York, F. S. Andrews. Shares 50 cents each. Head Office: Slocan City, B. C. Formed to acquire the "Silver Hill" and "Old Chum" mineral claims, situate in the Slocan Mining Division, in West Kootenay District, B.C.

Silver Hill Mining and Milling Co. (Foreign.)—Capital, $1,000,000, divided into 1,000,000 shares of $1 each. Head Office: Spokane, Wash.

Silver Hustler Mining Co., Ltd.—Capital, $300,000. Shares 25 cents. Trustees: Jno. Bryden, Moses McGregor, Jas. H. McGregor, Thos. S. Gore, B. Williams, A. B. Erskine, W. E. Oliver. Head Office: Victoria, B.C. Formed to purchase the whole or part of the Silver Bell and Hustler mineral claims, situate in that part of the District of West Kootenay, British Columbia, known as the Idaho basin.

Silver Leaf Mining and Smelting Co., Ltd.—Capital, $1,000,000. Shares $1.00 each. Trustees: F. Watson, Jos. W. Young, G. A. Fraser, F. J. Walker, Chas. S. Carpenter. Head Office: Rossland, B.C. Formed to acquire the "Maple Leaf," situated on the divide between Springer Creek and Ten-Mile Creek, and about six miles east of the Slocan Mining Division of West Kootenay District, B.C.

Slocan and Maple Leaf Mining and Development Co., Ltd.—Capital, $1,000,000. Shares $1.00 each. Trustees: J. M. Whitehead, J. M. McGregor, J. C. McLagan, F. E. Harrison, J. E. Miller. Head Office: Vancouver, B.C. Formed to purchase the Maple Leaf Mineral Claim, situate on Wilson Creek, in the Slocan Division of West Kootenay District, in the Province of British Columbia.

Slocan Belle Mining and Milling Co., Ltd.—Capital, $300,000. Shares 25 cents each. Trustees: E. N. Murphy, H. Doheny, J. M. Martin, T. McCausland, J. Cunningham. Head Office: Kaslo, B.C. Formed to purchase the "Northern Bell" mineral claim, situated in the McGuigan Basin, in the Slocan Mining Division of West Kootenay District, in the Province of British Columbia.

Slocan Beauties Silver Mining Co., Ltd.—Capital, $300,000. Shares 25 cents each. Trustees: James J. Mullhall, Samuel L. Prenter, Jno. J. Banfield. Head Office: Vancouver, B.C.

Slocan City Mining Co., Ltd.—Capital, $1,000,000. Shares $1.00 each. Trustees: Alfred J. Meadows, Archibald M. Beattie, F. S. Andrews. Head Office: Slocan City, B.C.

Slocan Lake Mining and Development Co., Ltd.—Capital, $250,000. Shares 25 cents each. Trustees: Geo. R. Stitt, Lacy R. Dillon, Geo. J. Wonder, Geo. L. Centre, Robt. W. Harris. Head Office: Vancouver, B.C. Formed to purchase the "Ferry No. 2" mineral claim, on Wilson Creek, in the Slocan Mining Division of West Kootenay District in British Columbia.

Slocan Maiden Mining and Milling Co. (Foreign.)—Capital, $1,500,000. Shares $1.00 each. Head Office: Tacoma, Wash.

Slocan Mines, Ltd.—Capital, $50,000, divided into 1,000,000 shares of five (5) cents each. Directors: O. Plunkett, L. Blair Hesse and W. C. Brown. Head Office: Vancouver, B.C. Formed for the purpose of mining in British Columbia.

Slocan-Monitor Mining Co. (Foreign.)—Capital, $1,000,000. Shares $1.00 each. Head Office: Spokane, Wash.

Slocan Silver Lead Syndicate, Ltd. (Foreign.)—Capital, $3,000,000, divided into 3,000,000 shares of a value of $1.00 each. Head Office: Toronto. Formed for the purpose of mining in British Columbia.

Slocan Queen Mining and Milling Co. (Foreign) — Capital, $1,000,000. Shares $1.00 each. Head Office: Spokane, Wash., U.S.A.

Slocan Silver-Lead Syndicate, Ltd. (Foreign). — Capital, $3,000,000. Shares $1.00 each. Head Office: Toronto, Ont.

Snowbird Mining and Development Co., Ltd.—Capital, $1,000,000. Shares $1.00 each. Trustees: Osborne Plunkett, Geo. E. Trorey, Jas. A. Fraser. Head Office: Vancouver, B.C. Formed to acquire the mineral claim "Snowbird," situate on Dayton Creek, in the Slocan Mining Division of West Kootenay, British Columbia.

Sunshine Mining Co. — Incorporated 1895. Authorized Capital, $50,000. Directors: N. D. Moore, W. H. Yawkey, W. C. Yawkey. Head Office: Three Forks, B.C. Formed to carry on mining operations in the Province of British Columbia. Claim being developed.

Twin Silver Mining Co., Ltd.—Capital, $1,000,000. Shares $1.00 each. Trustees: Jos. B. McArthur, D. F. Strobeck, A. L. McClaine. Head Office: Kaslo, B.C. Formed to purchase the "Twin" mineral claim, situate about two miles north of the Town of Ainsworth, in the Ainsworth Mining Division of West Kootenay District, in the Province of British Columbia.

NICKEL, COPPER AND PYRITES.

COPPER PRODUCTION, 1886-96.

Calendar Year.	Pounds.	Value.
1886	3,505,000	$354,000
1887	3,260,424	342,345
1888	5,562,864	667,543
1889	6,869,752	885,424
1890	6,013,671	902,050
1891	8,928,921	1,160,760
1892	7,087,275	826,849
1893	8,109,856	875,865
1894	7,737,016	735,017
1895	8,789,162	949,229
1896	9,385,556	1,021,148

EXPORTS OF COPPER IN ORE, MATTE, ETC.

Calendar Year.	Nova Scotia.	Ontario.	Quebec.	British Columbia.	Total.
1885			$262,600		$262,600
1886		$ 16,404	232,855		249,259
1887		3,416	134,550		137,966
1888			257,260		257,260
1889			168,457		168,457
1890		2,219	396,278		398,497
1891		64,719	283,385		348,104
1892	$100	79,141	198,391		277,632
1893		212,314	56,846		269,160
1894		25,029	12,005	$54,883	91,917
1895		123,997	15,692	97,276	236,965

COPPER IMPORTS, 30TH JUNE, 1896.

—	Quantity.	Value.
	Cwt.	$
Copper in Pigs	486	5,784
" Old and Scrap	381	3,406
" Bars, Rods, &c	2,051	24,282
" Ingots, Sheets, &c	14,611	168,421

Nickel Production.

(Geological Survey Returns.)

Calendar Year.	Pounds of Nickel in Matte	Price per lb.	Value.
1890	1,435,742	65c.	$ 933,232
1891	4,626,627	60c.	2,755,976
1892	2,413,717	58c.	1,399,956
1893	3,982,982	52c.	2,071,151
1894	4,907,430	38⅛c.	1,870,958
1895	3,888,525	35c.	1,360,984
1896	3,500,000	.....	1,155,000

Nickel: Exports.*

Calendar Year.	Value.
1890	$ 89,568
1891	667,280
1892	293,149
1893	629,692
1894	559,356
1895	521,783

* Practically all the nickel-bearing ore and matte produced in Canada is exported, the apparent discrepancy between Tables Nos. 1 and 2 being due to the different basis of valuation adopted in the two instances. Table 1 represents the total final values of the nickel produced in Canada, for the year represented. In Table 2 the worth of the product shipped is entered at its spot value to the operators and depends upon the particular stage to which they happen to carry the process of extraction at the time, *e.g.*, whether the shipments made are raw ore, low grade matte or high grade matte, etc.

Pyrites:—Production.

Calendar Year.	Tons.	Value.
1887	38,043	$171,194
1888	63,479	285,656
1889	72,225	307,292
1890	49,227	123,067
1891	67,731	203,193
1892	59,770	179,310
1893	58,542	175,626
1894	40,527	121,581
1895	34,198	102,594
1896	33,715	101,155

PYRITES:—IMPORTS. BRIMSTONE OR CRUDE SULPHUR.

Fiscal Year.	Pounds.	Value.
1880	1,775,489	$27,401
1881	2,118,720	33,956
1882	2,375,821	40,329
1883	2,336,085	36,737
1884	2,195,735	37,463
1885	2,248,986	35,043
1886	2,922,043	43,651
1887	3,103,644	38,750
1888	2,048,812	25,318
1889	2,427,510	34,006
1890	4,440,799	44,276
1891	3,601,748	46,351
1892	4,769,759	67,095
1893	6,381,203	77,216
1894	5,845,463	61,558
1895	4,900,225	56,965
1896	6,934,190	63,973

CANADIAN COPPER CO.

Organized January 6th, 1886. Capital Stock, $2,500,000, fully subscribed and paid up

Directors:

Hon. Stevenson Burke, *President*, Cleveland, O.

C. W. Bingham, *Vice-Pres.*, Cleveland, | A. H. Paget, New York.
Geo. G. Allen, Akron, O. | H. P. McIntosh, Cleveland.

CANADIAN OFFICE:

James McArthur, General Manager, Copper Cliff, Ont.

Mine Captain: Henry Davis.

Head Office:

Rooms 201-202 Perry-Payne Building, 103-109 Superior Street, Cleveland, O.

H. P. McIntosh, *Secretary-Treasurer.*

This company is the owner of mineral lands in the Townships of Blezard, Creighton, McKim and Snider, and has also a controlling interest in the Vermillion mine, in the Township of Denison, in the Province of Ontario, holding in all about 13,000 acres of the richest nickel lands in the Sudbury District.

On this property twelve large deposits of copper-nickel ores are known to exist, three deposits being at the present time developed and worked as producing mines,

and five having been explored by diamond drilling, will be worked as soon as the nickel market warrants such development. At present the three working mines supply enough ore to keep the smelters in constant operation.

All the mines, smelters, general office, etc., are connected by telephone lines to facilitate the transaction of business.

The working mines are known as the Evans, Stobie and Copper Cliff. The ore in each of these are practically the same mixture of minerals, though varying widely in their general appearance and richness.

The ores may be described as a mixture of nickeliferous pyrrhotite, pentlandite chalcopyrite and diorite. The diorite forms the matrix or gangue, in which the mineral occurs as shots and stringers. On the lower levels of the mines the ore occurs as massive mineral containing very little diorite. The chalcopyrite which is sorted out as copper ore, contains, when pure, about 33 per cent. copper. The pentlandite, which occurs in spots throughout the nickeliferous pyrrhotite, is a pure nickel mineral containing about 35 per cent. nickel, 35 per cent. sulphur and 30 per cent. iron. The nickeliferous pyrrohitite, which is the usual nickel ore, may be said to contain 60 per cent. iron and 40 per cent. sulphur, with a portion of the iron varying from 2 per cent. to 10 per cent. replaced by nickel.

The Vermillion nickel ore is a unique mineral, containing about 30 per cent. copper-nickel, with about three ounces of platinum per ton of ore. This platinum is also found to the extent of 6 to 8 ozs. per ton in the surface sand at the Vermillion mine, where it occurs as sperrylite or arsenide of platinum, a silver white sand or powder containing about 50 per cent. platinum.

The Evans mine is situated in the south-east corner of Snider. It is fully equipped with stockhouse, crusher, sorting tables, hoisting engines and boilers, and is surrounded by neat frame houses erected by the company for the use of its employees. The mine is worked both as shaft and open pit. In the main body of the ore an open pit about 80 ft. square and 200 ft. deep has been sunk. This method of ore mining is particularly adapted to the Sudbury mines on account of the strength and hardness of the diorite through which the ore reaches the surface. A vertical shaft about 30 ft. from the open pit follows it and communicates therewith by drifts in the ore body. The ore is quarried down in the open pit by drilling and blasting, the larger masses are blockholed and broken by small dynamite cartridges, and the ore is trammed through the drifts to the shaft, where it is hoisted by skips to the rock house. Arriving at the top of the shaft the ore is dumped over a grizzley or screen made of heavy rails, whereby the coarse ore is separated from that already broken fine, and the coarse ore is delivered in front of the crushers. These are of the Blake pattern, and crush about 20 tons per hour. The ore falls from the crusher jaws into a hopper which delivers it to a revolving screen. In the upper end of this screen the "fines" or small ore falls through a screen which is perforated with ¾ in. circular holes, and is from this delivered into its respective bins. The medium grade, or "raggings," falls through openings 1¾ in. in size in the middle portion of the revolving screen, while the coarse ore passes in pieces about 3 in. square, out of the lower end of the screen to the sorting tables. These tables are of iron, about 10 ft. long by 3 ft. wide, and are moved horizontally over a a three or four inch stroke with a jerking motion, which carries the ore towards the end of these tables. At each side of these tables a number of boys gather the ore from the rock and throw the ore into bins, marked "copper ore," "nickel ore," and "mixed ore," according to the predominance of one mineral over the other in the specimens.

The Evans mine ore, taking the mine as a whole, will average 2.88 per cent. copper and 3.06 per cent. nickel. The Evans mine ore is readily distinguished from that from other mines by its peculiar appearance, the nickel and copper ore being scattered through the black diorite in small nuggets of globular concretions like water-worn gravel in a conglomerate rock.

The Copper Cliff mine is about a mile and a half north by east of the Evans. The village of Copper Cliff is situated around this mine, and here the company's offices and shops are located. This mine is reached by an inclined shaft about 800 ft. deep. The ore, which, on the surface, was almost pure chalcopyrite has gradually given place to the nickelferous pyrrhotite, of which the seventh level was almost entirely composed. The machinery and rock houses used at this mine are of the same kind as

at the Evans, and the ore is treated in exactly the same way. The Copper Cliff ore may be recognized by its coarse grain and the flattened appearance of the pyrrhotite crystals. The average Copper Cliff ore contains 5.98 per cent. copper and 4.40 per cent. nickel.

The Stobie mine consists of a large open quarry in the face of a hill of ore. Test pits all over the surface of the Stobie hill show the presence of the same ore as is removed in the quarry. An incline shaft penentrates the ore under the quarry and is connected therewith by a cross-cut. This mine, which lies about 3½ miles north of the Town of Sudbury, is connected with the town by railway, over which the ore is brought to the roast yard at Copper Cliff. The Stobie ore is very close grained, and does not yield so readily to sorting as the Copper Cliff and Evans ores. It is valuable more for its high iron contents as a furnace flux than for its copper nickel, of which the average ore shows 1.84 per cent. copper and 2.13 per cent. nickel. The crushing and sorting is carried on in the shaft house in the same way as that at the Copper Cliff and Evans mines.

At all of the mines the ore is loaded on flat cars and pushed by an engine to the top of a trestle which runs parallel with the roast yard. This yard is about half a mile long and 100 to 150 ft. wide, and has a capacity of treating about 300,000 tons of ore per annum. On this yard the ore is piled to a height of 8 or 10 ft. on an 18-inch bed of soft wood, each pile being of rectangular oblong shape, and containing from 600 to 2,500 tons ore. The wood being fired, each heap burns from four to six months, the sulphur being lowered to about 7 per cent. and the iron being partially oxidized. When cold the ore is taken to the smelters. These are of Herreshoff pattern, of boiler iron, water-jacketed, about 9 ft. in height, of oval section, 6 ft. 6 in. by 3 ft. 3 in. at the tuyeres, and completely surrounded by a 3-in water jacket. Two furnaces are in continuous operation. Each furnace uses 100 tons ore and produces 15 tons matte per day. This matte passes from the furnace into an iron-cased, brick-lined, water-jacketed forehearth or well, in which the slag rises to the surface and flows over a slag-spout to a water-jet beneath the floor, whereby it is granulated and carried to the dump. The matte is tapped from the forehearth at 20 minute intervals into conical cast-iron pots holding about 800 pounds in which it is sometimes allowed to cool, and at other times poured into thin sheets on a slag for greater convenience in breaking up.

The average grade of standard matte contains copper, 20 to 25 per cent.; nickel 18 to 23 per cent.; iron 25 to 35 per cent., and sulphur, 20 to 30 per cent.

Up to December 1st, 1895, the company had produced about 475,000 tons of smelting ore and 52,100 tons of matte, which is equivalent to about 11,710 tons of copper and 10,680 tons of nickel.

At the refining works at Cleveland an especially fine grade of pure nickel is produced, either in the form of shots, ingots or anodes. An average assay of the nickel produced from the matte shows: nickel, 99 per cent.: copper, 5 per cent.; iron, .35 per cent.; sulphur, 06 per cent.; carbon, none, silicon, 0.1 per cent. This nickel is used for German silver, for nickel plating, and also for the manufacture of nickel-steel armour plates.

CAPE BRETON COPPER CO., Ltd.

Incorporated 15th January, 1896. Authorized Capital, $2,000,000, in shares of $10.

Directors :

Captain Isaac P. Gragg, *President.*

Col. Albert A. Pope.	G. T. W. Braman.
Henry W. Richards.	M. F. Dickinson, Jr.

Head Office : Thos. Mair, Treasurer, 53 State Street, Boston.

Mines Office : Coxheath, C.B., N.S.

Formed to acquire and work the copper mining leases and other property in Cape Breton County, N.S., formerly owned by the Eastern Development Co., Ltd. After purchase of the property $1,348,000 worth of stock at par remain in the Treasury for working capital.

Plans and estimates for further development of the mines, erection of concentration, smelting and refining works, and building of seven miles of railroad have been completed by Dr. Edward D. Peters, Jr., Copper Metallurgist of Boston, Horace F. Brown, Mining Construction Engineer, of Chicago, and Charles M. Odell, C.E., of North Sydney, and the company expects to be able to commence operations during the present year. Owing to the very favorable conditions in Cape Breton of cheap fuel and direct water communications to all parts of the world, the company expects to produce refined copper and market it at a very low cost per pound. Present developments at the mine include four shafts sunk 325 ft., 176 ft., 100 ft., and 40 ft. respectively, which have developed two strong veins. 50,000 tons of copper ore have been placed in mining sight, which is estimated to average from five to six per cent. copper, with a little gold and silver. The property has been reported upon by George Grant Francis, M.E., Dr. Edward D. Peters, Jr., Metallurgist, and examined by Edwin Gilpin, Jr., Inspector of Mines of Nova Scotia, Mr. Elfric Drew Ingall, of the Dominion Geological Survey, and other well known mining men and experts.

COPPER CREEK MINING CO.

Incorporated under the laws of the State of Michigan, October, 1892. Authorized Capital, $100,000; subscribed to date, $50,000.

C. M. Swift, *President.*

H. S. Sibley, *Secretary.* | T. H. Tretheway, *Superintendent.*

CANADIAN OFFICE.

Point Mamainse, Ont.

Head Office : H. S. Sibley, Secretary, 80 Griswold Street, Detroit.

This company has been developing under option a copper property, covering 11,400 acres, at Mamainse, in the District of Algoma, Province of Ontario. Opened by shaft, 308 ft. and open cuts. The machinery equipment at date comprises one 40 h.p. boiler ; one double cylinder hoisting engine (Jenckes), having 4 ft. drum ; one Rand 4-drill air compressor; Blake pump, etc.

DRURY NICKEL MINING AND MANUFACTURING CO., Ltd.

Incorporated 1896. Authorized Capital, $1,000,000 in shares of $10.

Directors:

Thos. Kiely. | Wm. Fennel. | Thos. Travers. | John Lawson.
Moffatt Lawson. | John Dewyer. | R. P. Travers.

Mines Office: Worthington, Ont.

Formed to acquire and work nickel and other minerals in the Township of Drury and elsewhere in the Province of Ontario. Owns Lot 3 in the 5th Concession of Drury, District of Algoma, and operates thereon the Inez mine, about 4½ miles north from Worthington station, on the Sault Ste. Marie branch of the Canadian Pacific Railway, or about 30 miles from the town of Sudbury. Smelter (Herreshoff) is of the rectangular type, consisting of four 4 in. water jackets, made from ½ inch steel plates, butted and mounted on a brick base. Smelts satisfactorily over 100 tons in 24 hours, and used as it is in processes of bessemerizing gives excellent results. Equipped with air compressor, hoisting and other working plant.

EUSTIS MINING CO.

Directors:

W. E. C. Eustis, Boston, *President.*
John Blue, Capelton, Que. | Hugh Cochrane, Boston.

Head Office:

55 Kilby Street, Boston.

CANADIAN OFFICE:

John Blue, C. & M. E., Eustis, Que.

This company owns and operates the Eustis mine on Lot 9, in the II. Range of Ascot and situate at Capelton station, on the Boston and Maine Ry., Que. The mine was formerly worked by the Orford Nickel and Copper Co., and then by the Orford Copper and Sulphur Co., being transferred to the present owners in 1878. The ore bed is an immense deposit of chalcopyrite, with much iron pyrites, yielding an average of 4 to 5 per cent. copper, some of the ore being very rich, and in addition contains an appreciable amount of silver; the lode varies in width from 4 to over 50 ft. From numerous assays of the ore the quantity of sulphur averages 40 to 45 per cent. No. 1 shaft, 2,300 ft. deep; No. 3, 2,350 ft., each from surface and measured on incline. The mine was originally opened on the top of the hill, at a height of 600 ft. over the Massawippi river. Work was begun, starting from shaft No. 5, and at a level of 500 ft. lower a cross-cut or tunnel, 1,000 ft. long, was run in to strike the lode, the development of which has been continued by means of the two shafts already mentioned and by leaving standing between them ore masses of 160 to 170 ft. These masses constitute an important reserve which can be drawn upon and removed at will. Mining work is being carried on by means of compressed air drills, and supports are provided for the mine by leaving pillars and putting up timbers; a single pump keeps down the water. As for the total output of the mine since its first working, it is difficult to

estimate it, but it is believed that it cannot be far from 600,000 tons, and for the last ten years the annual output has been from 25,000 to 30,000 tons. A part of the ore extracted is treated by the company, and the remainder is shipped to different points in the United States, for the manufacture of sulphuric acid, for which it is admittedly well adapted. At the works near the mine, there are 50 roasting ovens with a capacity of 1,000 tons per month, and two smelting furnaces for the reduction of the ore into matte. In addition a portion of the crude ore is roasted in the open air in piles containing as much as 250 tons, and the combustion of which is kept up for two months and upwards. About 200 persons employed. The plant comprises: Six boilers with total of 450 h.p.; 2 air compressors (1 Ingersoll, 10 x 30, 12 drill, and 1 Rand compound, 14 x 22, 12 drill capacity); 12 3 in. steam drills; Deane steam pump, 8 in. cylinder, 3 in. suction, 2 in. discharge (about 4 hours' pumping done weekly in mine); 1 Worthington duplex, 6 in. suction, 4 in. discharge, used for pumping water from river to dressing house to supply jigs; 2 winding engines (coupled on same shaft at opposite ends), each 14 in. dia., 26 stroke and 6 ft. 6 in. drum; 5 double jigs for small ore, etc.

NICHOLS CHEMICAL CO. OF CANADA, Ltd.

Incorporated under the laws of the State of New York. Capital paid in, $2,500,000.

Officers:

W. H. Nichols, *President.*

J. B. F. Herreshoff, *Vice-President.* | E. R. Nichols, *Treasurer.*
Geo. Martin Luther, *Secretary.* | Geo. G. Teller, *Auditor.*

CANADIAN OFFICE:

S. L. Spafford, Manager, Capelton, Que.

Head Office:

32 Liberty Street, New York.

W. H. Nichols, Jr., *Mining Engineer.*

A. W. Elkins, *Superintendent Chemical Works.*

This company's property contains about 5,000 acres, and is situate in the Township of Ascot, Sherbrooke County, and the Township of Bolton, Brome County, Province of Quebec. It operates at Capelton station on the line of the Boston and Maine Railroad, the Albert pyrites mine and the Capelton Chemical and Fertilizer Works, employing in all about four hundred persons. The annual output of ore from the mines ranges from 30,000 to 40,000 tons, a portion of which is utilized at the works and the remainder shipped to New York.

The workings consist of shafts Nos. 1, 2, 3 and 4. The present depth of No. 1 is 2,100 feet on the slope of the vein, which averages about 30 degrees from the horizontal. No. 3 shaft is about 400 feet deep, and No. 4 is about 700 feet deep. The longest level in the latter is a little more than 650 feet, following a productive vein all of that distance, except for about 50 feet, where a cross course disturbed the lode.

TILT COVE COPPER CO., Ltd.

Registered 4th April, 1888. Authorized Capital, £200,000, in shares of £2, £160,000 being ordinary, and the balance 10 per cent. preference. All the ordinary and £13,878 preference have been issued and paid. There are also 5½ per cent. debentures for £80,000, redeemable only at the option of the company. In 1888-9 there was a deficit, after providing for debenture interest of £15,575, and in 1889-90 this debit was increased to £25,991; in 1890-91, £34,379 8s. 5d.; 1891-2, £34,909 12. 8d.; 1892-3, £36,408 4s. 1d.; 1893-4, £37,276 3s. 9d. In June, 1890, the properties were leased for 99 years to the Cape Copper Co., Ltd., at a rental of $4,400 per annum—sufficient to cover the debenture charges—the Cape Copper Co. has power to determine the lease at any time on giving twelve months' notice. The Cape Copper Co. were to advance £15,000 by way of loan to the Tilt Cove Co. at 5 per cent. interest, and the whole of this amount has been paid; the loan is to be repaid out of profits, surplus profits thereafter to be divided equally between the two companies.

Directors:

J. R. Francis. | J. C. Lever.
John Reeves. | John Taylor.

Col. J. W. Young.

Head Office: E. C. Leaver, Secretary, 9 Queen Street Place, London, E.C.

NEWFOUNDLAND OFFICE:

F. J. Williams, Tilt Cove, Newfoundland.

Formed to acquire certain copper and other mineral properties at Tilt Cove, Twillingate district, Newfoundland.

The following is excerpted from the accounts presented to the shareholders, 25th May, 1897:—

BALANCE SHEET, AUGUST 31, 1896.

Liabilities.

	£	s.	d.	£	s.	d.
Authorized Share Capital—						
80,000 Ordinary Shares of £2 each	160,000	0	0			
20,000 Preference " " "	40,000	0	0			
	£200,000	0	0			
Issued: 80,000 Ordinary Shares, fully paid	160,000	0	0			
" 6,939 Preference " "	13,878	0	0			
				173,878	0	0
Debentures	80,000	0	0			
Second Debentures	1,550	0	0			
				81,550	0	0
Sundry Creditors—						
In England	2,805	1	7			
In Newfoundland	20	13	6			
				2,825	15	1
				£258,253	15	1

Assets.

	£	s.	d.
Purchase of Freehold Land, Buildings, Plant, and Machinery	220,000	0	0
Cash at Bankers and in hand	81	2	6
Revenue and Expenditure Account	38,172	12	7
	£258,253	15	1

REVENUE AND EXPENDITURE ACCOUNT—FROM 1ST SEPTEMBER, 1895, TO 31ST AUGUST, 1896.

Dr.

	£	s.	d.	£	s.	d.
To Balance from last Account				38,076	4	10
" Debenture Interest	4,400	0	0			
" *Less* from Cape Copper Company	4,400	0	0			
" Second Debenture Interest				74	5	0
" Interest and Discount				27	18	6
" Rent, Salaries and Management, Cable Messages, Printing and Stamps				412	8	0
" Shipping Expenses and Allowance on Copper Ore				87	10	0
				£38,678	6	4

Cr.

By Amount received for Old Plant and Materials	505	13	9
" Balance carried to Balance Sheet	38,172	12	7
	£38,678	6	4

BALANCE SHEÉT—FROM 1ST SEPTEMBER, 1895, TO AUGUST 31ST, 1896.

Dr.

	£	s.	d.
To Sundry Creditors	11,019	10	7
" Balance due to the Cape Copper Co., Ltd	78,684	10	7
	£89,704	1	2

Cr.

By Boyden's Level—for Expenditure	2,716	16	0
" Sundry Debtors	3,769	2	11
" Cash Balances	1,869	19	7
" Buildings and Machinery	35,733	14	11
" Stock of Materials at Mines and other Establishments	14,053	4	4
" Stock of Ores and Regulus	5,486	8	1
" Cost and Returns Account—for Balance of Account	26,074	15	4
	£89,704	1	2

EAST MINE COSTS AND RETURNS ACCOUNT.

	£	s.	d.
To mining costs	16,444	2	6
" Smelting costs	9,490	4	5
" Freight, insurance and Swansea charges	27,863	10	5
" Balance—Profit	15,189	11	3
	£68,987	8	7

Cr.

	£	s.	d.
By Ores and Regulus	68,987	8	7

PROFIT AND LOSS ACCOUNT.

Dr.

	£	s.	d.
To Balance from last year	31,310	1	11
" Rent	4,400	0	0
" Interest and discount—To Cape Copper Company, Ltd.	5,567	18	10
	£41,278	0	9

Cr.

	£	s.	d.
By Balance brought down	15,189	11	3
" Commission and Exchange	13	14	2
" Balance (to Balance Sheet)	26,074	15	4
	£41,278	0	9

GAS AND OIL.

Petroleum.

The petroleum field of the County of Lambton in western Ontario continues to be the only considerable source of supply of this important product yet developed in Canada. Oil was first obtained in this district at Oil Springs in 1861 from surface wells dug to a depth of 40 to 60 ft. in the neighborhood of peculiar deposits, locally known as "gum beds," formed by the evaporation of the petroleum which found its way to the surface. These primitive attempts were quickly followed by wells drilled in the rock, some of which were extraordinarily productive. The oil was reached at a depth varying from 100 to 240 ft., and the first gush in some wells yielded as much as 6,000 barrels per 24 hours. The famous Black & Mathewson well flowed at the rate of 7,500 barrels per day for a short time. This enormous output, owing to the low price of oil and insufficient methods of controlling the wells and storing the product, went almost wholly to waste. It has been calculated that during the spring and summer of 1861 not less than 5,000,000 barrels of oil flowed off on the waters of Black Creek—a quantity equal to five or six times the present annual production.

The Petrolia field was opened in 1865, and the period of greatest production was reached in 1866, when the noted King wells were struck, yielding 400 barrels per day. The Oil Springs and Petrolia fields are situated in the Township of Enniskillen, and comprise the main producing district. They are both of small extent. The former has an area of about 2½ square miles, and the latter of about 26 square miles. The area of production is, however, gradually enlarging, and during the past year experienced an addition of 3 or 4 square miles by the resumption of operations in the old Bothwell field, which was abandoned in 1866 on account of the fall in the price of oil and the flooding of the wells by salt water. There appears to be an anticlinal in the Township of Zone which extends into the Township of Orford, and it is on this that the recent wells have been sunk, some of which have at the start yielded as much as 100 barrels per day. The anticlinal runs pretty nearly due east and west, and so far as delineated seems to be about 5 miles long by ½ a mile wide. Three separate horizons of oil-bearing rock are met with. The first is at the top of what is locally known as the great limestone, at a depth from the surface varying from 150 to 200 feet, according to the depth of the drift; but this source, though yielding a good deal of oil for a short time, is not a permanent one. The next is at a depth in the great limestone of from 50 to 100 feet, and this also occasionally yields largely for a short time. The permanent supply is found in a reddish sandstone underlying the limestone, at a depth of about 400 feet from the surface. Some of the wells yield 30 barrels per day, some 20, 15 or 10, but the majority average 5 or 6. The re-opening of the Bothwell field bids fair to add considerably to the output of petroleum in Ontario. Oil was found in 1895 on Pelee Island, and since then several wells have

been sunk, in three or four of which oil has been struck, but the value of the field has not yet been proven.

The average yield of the wells in the Lambton district has steadily decreased since the field was opened, and instead of the great gushers which were common at the beginning, wells now opened rarely give more than a barrel or a barrel and a half per day for a month or six weeks, when they sink to a yield of eight or ten barrels per month, which is about the average production of wells in the district. Old wells are constantly being abandoned and new ones put down. The long life of the wells and their great number to a large extent offset the decrease in their yield. The field shows little sign of exhaustion, and its output remains comparatively steady from year to year, the annual return being from 800,000 to 1,000,000 barrels. In 1891 the production was 894,647 barrels; in 1892, 800,000 barrels; in 1893, 973,000 barrels; in 1894, 997,500 barrels; in 1895, 821,721 barrels, and in 1896, 782,300 barrels. A barrel contains 35 Imperial gallons.

The oil-bearing rock is the Corniferous limestone, which at Petrolia lies at a depth of about 400 ft. below the surface, and in all cases the oil is found in what is known as the "lower vein," which occurs at a depth of about 65 ft. in the formation. At Oil Springs the depth of the borings is somewhat less, oil being found at 370 ft. from the ground and about 60 ft. below the surface of the Corniferous limestone. The Trenton limestone, which is the great oil-bearing formation in Ohio, underlies the Corniferous in Lambton County, being separated from it by various other members of the Silurian system, and in the opinion of some geologists it is not unlikely that the petroleum originates in the Trenton and finds its way up to the Corniferous. Dr. Selwyn, late director of the Geological Survey of Canada, has stated that "in all probability there is a very large area of petroleum-bearing strata under central Ontario which has as yet never been reached, and which corresponds with the Ohio petroleum-bearing strata."* The deepest boring yet made in the oil district reached a depth of 1,505 ft., but it probably ended in the Onondaga formation, a long distance above the Trenton, and it has yet to be proven by actual demonstration that the latter is an oil-bearing system in the present petroleum region, or indeed elsewhere in Ontario.

Like all petroleum derived from the limestone rocks, the Ontario product carries a good deal of sulphur, being in this respect more akin to the Ohio than to the Pennsylvania article. The following analyses show approximately the comparative composition of the Ontario and Ohio petroleums :—

	Ontario.	Ohio.
Carbon	83.94	84.57
Hydrogen	13.37	13.62
Sulphur	1.01	.72
Specific gravity	.860	.338†

The crude petroleum of Ontario is thick, and dark in color, and its treatment for the production of high grade illuminating oil was at first beset with a good deal of

*Report Royal Commission on Mineral Resources of Ontario, 1890, page 69.

† Composition of the American Sulphur Petroleums, by Prof. C. F. Mabery, pp. 25,39.

difficulty, owing chiefly to the trouble experienced in eliminating the sulphur. But by introducing the method of redistillation and other various improvements, the Ontario refiners have been enabled to place on the market an oil very little, if at all inferior, to the best American. The percentage of illuminating oil now recovered from the crude is also greater than formerly; in 1895 the average was 43.31 per cent., as against 38.67 per cent. in 1892. The Pennsylvania crude is much richer in illuminating oils than the Canadian, but the latter yields a greater proportion, and, it is asserted, a better quality of lubricating oils. These form about 12 per cent. of the crude oil, and are produced in many grades, to suit the purposes for which they are intended. All other products, except paraffin, make up 28 per cent.; these include benzine, gasoline, naphtha, vaseline, etc. From the paraffin wax, of which a gallon of crude oil yields about .08 lb., candles and other articles are manufactured. A complete enumeration of the products of evaporation would be about as follows: illuminating oil, 43 per cent.; gas oil, 17 per cent.; tar, 15 per cent.; waste, 10 per cent.; water, 6 per cent.; coke, 9 per cent. In 1896 the total quantity of crude petroleum treated (including quantity used for fuel) was 27,380,588 imperial gallons, valued at $1,222,307, from which there were manufactured 11,342,880 gallons illuminating oils worth $1,263,229; 2,283,047 gallons lubricating oil worth $204,946; 7,821,262 gallons all other oils worth $340,054; 1,532,671 lbs. paraffin wax worth $76,250, and a quantity of fuel product. The price for Canadian crude showed a steady decline for some years prior to 1894, and in May of that year it reached a minimum of 92 cents per barrel, when a rapid recovery of value set in, and the year 1895 closed with crude oil worth $1.70 per barrel for Petrolia, and $1.72 for Oil Springs, and in active demand. Prices were fairly steady in 1896, closing at $1.52 for crude at Petrolia.

The business of refining is now mainly centred at Petrolia, where four refineries are in operation, with a capacity more than equal to the entire output of the oil field. The oil is distilled in large sheet iron retorts. The heat is furnished by a spray of mixed petroleum and steam injected into the fire chamber below the retort, which is lined with fire brick. The distillate is carried through tubes immersed in long vats of water. As the different distillates make their appearance at various stages of the process, they are led into different troughs and flow into separate tanks. First, the incondensable gases, gasoline and naphtha, come off; then the illuminating oil; following that, the intermediate and wool oils, and lastly the lubricating oils; while an incrustation of carbonaceous matter or coke is left in the retort, which makes a good fuel. All the grades of the distillation are divided at will, either by stopping the process at various stages or by subsequent redistillation and treatment, into an almost endless variety of lighter and highly combustible intermediate illuminating oils, and also into such solids as vaseline, paraffin, etc. To refine the illuminating oil it is agitated with 2 per cent. sulphuric acid for the purpose of removing the free carbon or tarry materials, which are drawn off below, then after washing it with water, caustic soda and litharge are added. The litharge combines with the sulphur and forms lead sulphide. Flowers of sulphur is then added, which precipitates the lead and other impurities, and the oil is left cleared, but with still a small proportion of sulphur. To

overcome this for the higher grade of oils, redistillation is resorted to, after the litharge and caustic soda have been added and before the flowers of sulphur has been put in. The greater part of the remaining sulphur is thus got rid of, being left in the retort in combination with the lead. The result of this process is an excellent quality of illuminating oil.

The Petrolia Oil Company was incorporated in 1881, with a capital of $40,000. The refinery was established in 1872 by Messrs. Cochrane and Williams, the latter of whom was the pioneer of oil refining in the Petrolia region. Its capacity is 10,000 barrels crude per week. The president of the company is Mr. J. D. Noble. The works of the Imperial Oil Company have a refining capacity of 750,000 barrels of crude per annum. This company was incorporated in 1880, and has a capital of $500,000. Mr. F. A. Fitzgerald is president. The National Oil Company, John Macdonald, president, was organized in 1892, with a capital of $150,000. Its capacity is 4,000 barrels crude per week. The partnership concern of Messrs. Fairbanks, Rogers & Co. was formed in 1892, Mr. Fairbanks being the largest single producer of crude oil in Canada. The capacity of the works is 2,000 barrels of crude per week. In August, 1896, the works of this firm were taken over by the Bushnell Company, Limited. The Empire Oil Company of East London is also engaged in the refining of Petrolia crude oil. The products of the refineries are illuminating and lubricating oils of various grades, wool and cylinder oils, paraffin wax, benzine, gasoline, naphtha, binding twine oil, etc. Most of the oil is shipped in barrels, but some of the illuminating is put up in square tin cans. The Petrolia Crude Oil and Tanking Company carries on the business of dealing in and storing crude oil in the underground tanks described below. Its capital is $50,000, and the president of the company is Mr. Charles Jenkins.

The crude oil is collected from the individual wells by waggon tanks and delivered at receiving tanks, whence it is pumped to the refineries. A method of storing the oil has been adopted which is peculiar to this field. Eighteen or twenty feet below the surface is found an impervious blue clay, and excavations are made in this 60 ft. deep and 30 ft. in diameter. A wooden lining extends 30 ft. down into the tank, and the crude oil is kept in this way without danger of fire or leakage. Another characteristic method of the district is that of raising the oil from the wells. They have all to be pumped, and as the yield is small economy forbids the employment of a separate engine for each well. The "jerker" system of pumping was therefore introduced, and is now in universal use. A 12 h.p. engine operating a horizontal wheel, with which a combination of pump rods is connected, so arranged that their weights about balance one another, suffices to raise the oil from a large number of wells—as many as 90 in some cases.

In the Province of Quebec borings for petroleum have been carried on for a period covering many years in the County of Gaspé. Latterly the work has been done by the Petroleum Oil Trust, Ltd., of London, England, chiefly on the left bank of the York River. A light green oil, said to resemble that of Pennsylvania, has yet been struck in several of the wells at a depth of about 2,000 ft., and a certain number of barrels have been got out out as samples, but no regular work of production has yet

been begun. A remarkable and extensive series found along the Athabasca river, in the district of Athabasca, N. W. T., and known as the "tar sands," contains a large proportion of bitumen, and drillings have been undertaken by the Dominion Government to ascertain whether supplies of petroleum exist in the underlying Devonian rocks. No decisive results have yet been reached. Petroleum has also been found in the South Kootenay Pass, B.C.

Natural Gas.

It is true of natural gas, as of petroleum, that the Province of Ontario is the only portion of the Dominion where it has been found in large quantity, and so far as is known the supply is limited to two fields. One occupies a small area along the north shore of Lake Erie, chiefly in the township of Gosfield South, in the County of Essex, where the gas-hearing formation is supposed to be either a Clinton or Niagara limestone and is reached at a depth of 1,050 ft. In this field there are eight producing wells whose capacity is estimated at 60,000,000 cubic feet per day The gas is supplied to the neighboring villages of Kingsville, Ruthven and Leamington, but the main outlet and place of consumption is tbe City of Detroit, Mich., to which the gas is piped through the intervening distance of 35 miles, and across the bed of the Detroit river. The towns of Windsor, Walkerville and Sandwich, on the Canadian side, are also supplied from the same line. The Ontario Natural Gas Company and the Kingsville Natural Gas and Oil Company are the two concerns which operate the wells and control the gas territory in this district. The other gas field is in the counties of Welland and Haldimand; and it stated to extend from the village of Ridgeway in the former county to the village of Cayuga in the latter, a total length of 35 miles. The field, however, is probably not productive for the whole of the length. The principal gas-bearing rock is in the Medina sandstone at a depth of about 850 ft.; but west of the Welland canal the supply seems to come from the overlying Clinton limestone at a depth of about 700 feet. The owners of wells in Cayuga, Dunnville, Port Colborne and Humberstone village supply the needs of their respective localities, but the main producers of gas are the Provincial Natural Gas Company and the Erie Natural Gas Company, which deliver nearly the whole of the output of their wells in the townships of Bertie and Humberstone to the City of Buffalo, N.Y. The length of the former company's pipe line from the centre of their gas field is 14 miles, and in 1894 the delivery of gas to Buffalo was at the rate of 4,600,000 cubic feet per day. The Welland gas field has been in operation for nearly six years, and under the continuous demands upon it is giving signs of approaching exhaustion, the rock pressure, which stood originally at about 570 lbs., having fallen to one fifth of that amount, or less. Gas began to be delivered at Detroit from the Esssex Field early in 1895, and is now going into that city in large volume. There are grounds for supposing that notwithstanding the limited area covered by the wells in Essex, the field is really of large extent, and perhaps underlies a portion of the bed of Lake Erie. The total output of natural gas in Ontario in 1893 was 2,342,000,000 cubic feet, valued at $238,200; in 1895 it was 3,320,000,000 cubic feet, worth $282,968. A considerable portion of the output in the latter year was from the Essex field.

Natural gas is found in greater or smaller quantities wherever petroleum is found, but the former often occurs where the latter is present in small quantity only, or even is wholly absent. The Trenton limestone, the great natural-gas bearing formation of Ohio, underlies a large part of southern Ontario and Quebec, and in many places where it has been reached by borings in the former Province small flows of gas have been struck, but no large or continuous yield has yet been obtained from it. In the counties of Kent and Elgin, in Ontario, gas is quite commonly found in the drift above the bed rock, but the quantity is small and soon exhausted. Small flows have been obtained from the Trenton at St. Gregoire and elsewhere in Quebec, and it is regarded as probable that its exploitation at other points would lead to further discoveries. In several of the other Provinces of the Dominion and in the Northwest Territories natural gas has been found, but so far the discoveries have not seemed of sufficient promise, or have been too far from means of utilization, to warrant large expenditures of money in developing them.

The conditions which must be present in a petroleum or gas-bearing formation to constitute a productive field are (1) sufficient porosity to afford storage accommodation for the oil or gas, whether generated in the formation itself or in underlying strata, (2) continuity of the beds and an absence of faults or fissures through which the oil or gas might escape, and (3) an impervious covering of shale or clay to confine the product within the limits of the formation. The strata must be unaltered and sedimentary in character, and the localities most likely to prove reservoirs of gas or oil are the anticlinals, or dome-like configurations, usually present in fields of large supply. As to the origin of petroleum and natural gas various theories have been propounded, though all authorities agree in assigning them, at least for the most part, a common source. One is that they are of purely inorganic origin, and are formed by the action of water on heated carbides of the metals in the interior of the earth, but the prevalent opinion is that they are the result of the decomposition of animal and vegetable remains enclosed within the rocks. Under the former view, oil and gas are in continuous process of production, and we may hope for a constant and almost unlimited supply ; under the latter, the quantity of both is practically fixed, and no more can be looked for from a field than is contained within it when first opened. The partial, and in some cases, total exhaustion of oil and gas fields in the United States and elsewhere seems to point to the conclusion that, like mineral deposits in general, the accumulations of petroleum and natural gas are already complete, and are therefore in the strictest sense limited and exhaustible.

Duty.

Illuminating oils composed wholly or in part of the products of petroleum, coal, shale or lignite, costing more than 30 cents per gallon, 25 per cent. *ad valorem.*

Lubricating oils composed wholly or in part of petroleum, and costing less than 25 cents per gallon, 5 cents per gallon; all other lubricating oils, N. E. S., 25 per cent.

PRODUCTION.

Product.	1893. Quantity.	1893. Value.	1894. Quantity.	1894. Value.
Petroleum —Imp. Gal.	34,055,000	.....	34,912,360	.....
Illuminating Oil "	13,322,320	$1,372,209	14,349,472	$1,137,040
Lubricating Oil "	4,239,847	277,500	3,817,181	242,688
Other Oils "	11,220,705	323,156	10,632,141	343,416
Paraffin Wax, lbs.....	2,250,000	143,325	2,754,300	152,467
Fuel Product	.....	72,500	.....	71,326

Product.	1895. Quantity.	1895. Value.	1896. Quantity.	1896. Value.
Illuminating Oil, Imp. Gal.	10,924,826	1,237,328	.....	.....
Lubricating Oil "	2,400,404	205,591	.....	.....
All Other Oils "	7,081,717	285,308	.....	.....
Paraffin Wax, lbs.....	1,964,228	86,608	.....	.....
Fuel Product	.....	79,589	.....	.....

AVERAGE PRICE OF CRUDE OIL ON THE PETROLIA OIL EXCHANGE.

1886...	88·68 per barrel.	1892.....	126·50 per barrel.
1887.....	78 "	1893.....	110·25 "
1888...	103·84 "	1894.....	101·50 "
1889	95·54 "	1895.....	146 "
1890.....	117·86 "	1896.....	159 "
1891.....	133·77 "		

CANADIAN OILS AND NAPHTHA INSPECTED BY THE DEPARTMENT OF INLAND REVENUE.

Calendar Year.	Refined Oils Inspected.	Crude Equivalent Calculated.	Ratio of Crude to Refined.
	Galls.	Galls.	
1881.....	6,406,783	12,813,566	100 : 50
1882.....	5,910,787	13,134,993	100 : 45
1883.....	6,970,550	15,490,111	100 : 45
1884.....	7,656,011	19,140,027	100 : 40
1885..... ...	7,661,617	19,154,042	100 : 40
1886.....	8,149,472	21,445,979	100 : 38

CANADIAN OILS AND NAPHTHA—Continued.

Calendar Year.	Refined Oils Inspected.	Crude Equivalent Calculated.	Ratio of Crude to Refined.
	Galls.	Galls.	
1887	8,243,962	21,694,637	100 : 38
1888	9,545,895	25,120,776	100 : 38
1889	9,462,834	24,902,195	100 : 38
1890	10,121,210	26,634,763	100 : 38
1891	10,270,107	27,026,597	100 : 38
1892	10,370,707	27,291,334	100 : 38
1893	10,618,804	27,944,221	100 : 38
1894	11,027,082	29,018,637	100 : 38
1895	10,674,232	25,414,838	100 : 42

BERTIE NATURAL GAS COMPANY.

Incorporated 21st February, 1891. Authorized Capital, $8,000, of which to date about $4,000 has been paid up.

Directors:

H. N. Hibbard.
B. M. Disher. | I. L. Pound.
John Young. | A. H. Kilman.

Head Office: A. H. Kilman, Sec.-Treas., Ridgeway, Ont.

The operations of this company are at the village of Ridgeway, on the Buffalo and Goderich line of the Grand Trunk Railway. One well 870 ft. deep; pipe line laid for about two miles; product entirely consumed in the village for light, heat and motive power. The first gas was found in the Clinton limestone at 725 ft.; the second in red Medina sandstone at 785 ft.; but the best flow was obtained at 840 to 850 ft. in the white Medina. A 3 inch pipe has been put down to the bottom of the well, through which the gas from the second and third horizons is delivered to the service pipe.

In 1893 a second well was put down. It is located about half a mile north-east of No. 1 well. The formations passed through were very similar to those pierced in boring the first well, the chief difference being that corresponding strata were found at from 10 to 15 ft. nearer the surface, due to the southerly dip of the rock. The product of No. 2 is estimated at about half that of No. 1; that is to say, nearly 250,000 cubic feet in 24 hours. This well is now piped to the regulating station, and the gas from either well or from both may be used at will. This gas is used for local purposes only.

Reporting 1st Jan., 1896, the Secretary writes: "The product of gas from these two wells is yet sufficient to supply the village, though a decrease of pressure is noticeable—not, however, running so low as to allow the water to enter or to necessitate "blowing off." The gas is used economically and is indeed a boon to the village. About 120 houses, stores, hotels, etc., are supplied with fuel from the two wells. The Standard Oil Company—controlling the gas field here—pipe the product to Buffalo. Our little local company is struggling to save for our own people a share of the vanishing luxury—natural gas. The output of great wells around us goes by our village at high

pressure. The effect of the heavy drain begins to show, as during some months our wells have steadily decreased, and the water must be "blown off" at regular intervals to prevent flooding the regulators," and under date of 31st March, 1897, "the pressure is slowly but surely decreasing. It is a matter of more wells or less consumers for next winter."

BOTHWELL OIL AND GAS CO.

Incorporated 1896. Authorized Capital, $250,000 in shares of $5.00.

Directors :

H. A. Walker, Walkerville, Ont. | H. C. Walker, Walkerville, Ont.
W. T. DeGraff, Detroit, Mich. | Isaac DeGraff, Detroit, Mich.
Hiram Walker, Isle aux Peche, Ont.

Head Office : Walkerville, Ont.

Formed to drill and operate for petroleum and gas in the Province of Ontario. Being organized at date of report.

CROWN WAREHOUSING CO., Ltd.

Incorporated 1885. Authorized Capital, $50,000, in shares of $100.
Paid up Capital, $33,000.

Directors :

C. Jenkins, *President and Secretary.*
John D. Noble, *Vice-President.* | Robert D. Noble.

Head Office : Petrolia, Ont.

This company operates 16 wells at Petrolia, and a similar number at Oil Springs, Ontario, producing about 375 barrels per month. Length of pipe lines, 15 miles. Receiving stations at Petrolia and Oil Springs, having a storing capacity of 50,000 barrels of underground tankage for holding crude oil.

DUNNVILLE NATURAL GAS CO.

Incorporated 1891. Authorized Capital, $20,000, in 600 shares of a value of $25.00 each.

Directors :

F. J. Ramsay, *President.*

J. Brown. | J. Taylor. | J. Carmody. | W. F. Haskins.
Dr. G. A. McCallum. | A. Boyle. | J. Mahle. | W. D. Swayze.
T. Armour. | L. A. Congdon.

Head Office : Louis A. Congdon, Secretary, Dunnville, Haldimand Co., Ont.

Formed to bore and drill for natural gas, and supplying the same in the town of Dunnville, Haldimand Co., Province of Ontario. The Secretary writes that at date eight wells have been sunk in the village of Dunnville, yielding approximately about 400,000 ft. of gas per day. The first show of gas was found in the Clinton formation at 612 ft., and this bed yields about one-fifth of the total flow. The second flow was obtained in the white Medina sandstone, between 740 and 752 ft., but the strongest flow came from 747 ft. The boring was continued in the red shale so that it might serve as a drain or pocket to receive any fragment of sand or other rock which might fall into it. When the well was finished the gas showed a pressure of 335 lbs., and the yield was estimated at 150,000 to 200,000 cubic ft. per day, measured with an open flow. A second well was commenced immediately after on the left bank of the Grand river, distant about a mile from the first and bored to a depth of 780 ft. A third and fourth well were afterwards put down. At last report six wells had been completed and the seventh was down about 100 ft. The flow in the fifth and sixth wells was similar to No. I, and larger than either No. II., III. or IV. The well pressure has decreased from 335 lbs. to 250 lbs. The product is consumed for fuel in 100 cooking stoves and about the same number of heating appliances, and perhaps 50 lamps or jets. Two miles of pipe line owned. Writing under date of 26th January, 1896, the Secretary says: "The rock pressure does not exceed 200 lbs, and volume of flow is gradually decreasing, being now about 50 per cent. less than three years ago."

FAIRBANKS, ROGERS & CO.

Organized July, 1892. Capital invested at date of last report, $50,000.

Managing Owner: J. H. Fairbanks, Petrolia, Ont.

Carry on the business of oil refiners at Petrolia, Ont. 20 persons employed. The annual capacity of the works may be stated to be as follows:—

Crude oil (barrels)	75,000
Illuminating oils (galls.)	1,000,000
Benzine and naphtha (galls.)	150,000
Paraffin oils (galls.)	130,000
Lubricating oils, gas, oil and tar (barrels)	30,000
Paraffin wax (lbs.)	170,000

IMPERIAL OIL CO.

Incorporated May, 1880. Authorized Capital, $500,000 in shares of $100.

Directors:

F. A. Fitzgerald, *President.*

J. L. Englehart.
T. H. Smallman.
H. Waterman.
Frank Smith.
Frank Ward.
T. D. Hodgens.

Head Office: Wm. Pratt, Secretary, Petrolia.

Probably the most important oil refining company in Canada.

ANNUAL CAPACITY.

Illuminating oils	9,500,000	gallons.
Benzine and naphtha	600,000	"
Paraffine oils	1,300,000	"
Gas and fuel oils	4,000,000	"
Lubricating oils and tar	4,200,000	"
Paraffine wax	2,000,000	lbs.

ANNUAL CONSUMPTION OF CHEMICALS.

Sulphuric acid	3,500,000	valued at	$45,500 00
Litharge	150,000	"	5,500 00
Caustic soda	350,000	"	7,500 00
Sulphur	40,000	"	600 00
Other chemicals			2,500 00

KINGSVILLE NATURAL GAS AND OIL CO.

Incorporated 30th October, 1890. Authorized Capital, $43,740, all subscribed and one-ninth paid up. Shares, $20 each.

Directors:

Dr. S. A. King, *President.*

Jas. Brown, *Vice-President.* | Ira Loop.
Curtis Green. | Sol. Wigle.

Dr. Allworth, *Treasurer.*

Head Office: Jas. W. King, Secretary, Kingsville, Ont.

This company was first known as the Kingsville Citizen's Natural Gas Oil Association. Four wells have been put down at the village of Kingsville, Ont., the average depth being 1,035 ft. Writing under date of 2nd February, 1892, the Secretary reports: "We are supplying the village of Rutven, a small place four miles east of us, and the line has been extended to the west, until at present we have upwards of ten miles of pipe line, with five reducing stations. The pipe lines vary from 1 to 4 inches. Our main high pressure line to Kingsville is 3 inches to the reducing station. After leaving the station the main low pressure line is 4 inches, from which different sized lines branch. In the village of Ruthven we carry from 1 to 1½ pounds pressure. In Kingsville we carry from 1 to 2 pounds. We have about 350 cook stoves attached, 175 heating stoves, 25 house furnaces, besides open grates, lights, etc. Then in addition to this we supply gas to the woollen mill, grist mill, sash and door factories, turning factory, grain elevator, the Mettawas summer resort, fruit drying establishment, the churches, halls, lodge rooms and many other places. It also furnishes the fuel for burning lime, the stone for which is brought here from Pelee Island." Reporting on 13th January, 1896, the Secretary writes: "We have added to our list of consumers about 50 stoves, the South Essex preserving factory, a basket factory, and a foundry. The supply at date is entirely taken from one well which has been in use for over five years, and the pressure shows no sign of diminution, notwithstanding there are two 8 inch lines taking gas out of the field supplying Walkerville, Windsor and Detroit,

LAKE ERIE OIL AND GAS COMPANY.

Incorporated 1896. Authorized Capital, $45,000.

Directors:

A. M. McIntyre. | James Poole. | D. C. Clay. | Colin S. Leitch.

Head Office: Dutton, Ont.

Formed to drill for gas and oil in the townships of Aldborough, Dunwich, Southwold, and the village of Dutton.

MUTUAL NATURAL GAS COMPANY OF PORT COLBORNE, Ltd.

Incorporated 1891. Authorized Capital, $20,000, in 200 shares of $100 each, of which $14,000 has been subscribed and paid.

Directors:

John Reeb, *President.*
Menna A. Reeb, *Vice-President.* | Eugene Reeb, *Manager.* | William Reeb.

Head Office: Frank D. Noble, Secretary, Port Colborne, Ont.

Formed to drill wells for natural gas, oil and other mineral products, to construct pipe lines, etc. The company owns 25 acres, situated on the west side of the Welland Canal, in the County of Welland, Province of Ontario, and to date has drilled five wells, each of a depth of 830 ft., yielding a daily flow of about 1,500,000 cubic feet of gas. It supplies the village of Port Colborne, the number of consumers being about 285. Among other industrial consumers are the Ontario Silver Company's works at Humberstone, where the gas is used for annealing, and the estimated daily consumption is 50,000 cubic feet in winter and 25,000 to 30,000 cubic feet in summer, Neff Bros.' foundry and machine shop, Morningstar's grist mills, and Grand Trunk Railway water pumping station. The value of machinery plant and buildings owned by this company is estimated at $27,000.

NATIONAL OIL CO., Ltd.

Incorporated 15th July, 1892. Authorized Capital, $150,000, in shares of $100.00. Invested Capital, $110,000.

Directors:

James Fiddes | John McDonald. | W. E. Langford.

Head Office: John McDonald, President, Petrolia, Ont.

W. Langford, *Secretary.*

Engaged in the business of oil refiners at Petrolia, Ont. Eighteen persons employed.

ANNUAL CAPACITY.

Illuminating oils (gallons)	2,520,000
Benzine and naphtha "	478,000
Paraffin oils "	315,000
Lubricating oils and tar	2,961,000
Paraffin wax, lbs	1,134,000

ANNUAL CONSUMPTION OF CHEMICALS.

Sulphuric acid	705,004 lbs.,	valued at	$9,519.16
Litharge	154,966 "	"	4,617.09
Caustic soda	37,465 "	"	859.79
Sulphur	16,384 "	"	267.46

NATURAL GAS AND OIL CO. OF ONTARIO, Ltd.

Incorporated 1894. Authorized Capital, $500,000, in shares of $50.00.

Directors:

Hiram Walker, Detroit.
S. A. King, Kingsville, Ont. | C. M. Walker, Walkerville, Ont.
Thos. Reid, Walkerville, Ont. | Hiram A. Walker, Walkerville, Ont.

Head Office: S. T. Copus, Secretary, Windsor, Ont.

Formed to acquire in the County of Essex lands or interest in which to sink wells for natural gas, oil and other minerals. The company has about twenty producing wells, from which the Town of Walkerville, City of Windsor, Ont., and the City of Detroit, Mich., are supplied; the plants being fed by two lines, one an eight inch extending 33 miles, and another, a telescope of eight and ten inches.

PELEE GAS AND OIL CO. OF ONTARIO.

Incorporated 1895. Authorized Capital, $30,000.

Directors:

George Jasperson.	S. L. McKay.	Herman Dey.	W. A. Smith.
H. Mosher.	W. A. Nelson.	Bon. Jasperson.	A Wigle.

Head Office: Bon. Jasperson, Managing Director ; S.L. McKay, Sec.-Treas., Kinsville, Ont.

Formed to acquire and work gas and oil wells in the Township of Pelee and at the village of Kingsville in the County of Essex, and in the County of Essex, Province of Ontario.

PETROLEUM OIL TRUST, Ltd.

Registered 20th August, 1891. Authorized Capital, £430,000; £330,000 in ordinary shares of £1, and £100,000 in preference shares of £10, ranking first for dividends of 7 per cent. per annum, with the option to holders of converting into ordinary shares at any time within three years on six months' notice. Of the ordinary capital, $345,940 has been allotted and paid up, £314,988 having been issued to the vendors, and of the preference capital, £39,490 has been subscribed and called up. The preference dividend is guaranteed for three years by the Charing Cross Bank has been regularly paid in June and December.

Directors:

Lord Berwick, *Chairman.*

J. H. Atkins. | A. W. Carpenter. | J. Foley. | P. A. Hutchison.

Head Office: E. S. Peach, Secretary, 22 Henrietta Street, London, W.C.

Canadian Office: J. Foley, New York Life Building, Montreal.

Works and Wells: C. B. K. Carpenter, Supt., Gaspe, Que.

Formed to acquire properties in the Gaspé district and elsewhere in the Province of Quebec, covering an area of 40,137 acres freehold, with mining rights over 10,220 acres in addition. At 10th January, 1896, the company had 26 derricks, some of the wells being put down to a considerable depth. A number of the wells are reported to be pumping oil of a very superior quality. Ten new derricks have recently been constructed and are now drilling. The oil is found at depths varying from 1,300 to 3,000 ft., and is of a light green color, perfectly odorless.

PETROLIA CRUDE OIL AND TANKING CO.

Incorporated 1874. Capital Stock, $50,000, divided into 1,000 shares of $50 each, of which, to date, $49,376.36 has been subscribed and paid up.

Directors:

Chas. Jenkins, *President.*

J. D. Noble.	J. H. Fairbank.
R. D. Noble.	R. I, Bradley.
R. Morris.	John Fraser.

Head Office: Chas. Jenkins, President, Petrolia, Ont.

The company owns and operates 62 wells, situate on Lot 12–12 Con. Enniskillen, Lots 13–11, 12-11 and 14–11, Petrolia, and Lot 16–2nd, Oil Springs; average depth, 465 ft.; average daily capacity, about half a barrel. Near the close of 1896 the company bought the entire property of the Producers Tanking Co. The company has now storing capacity of 350,000 barrels; receiving stations in Moore Township, Marthaville, Oil Springs, and three in Petrolia. Owns 34 miles of pipe line.

The following statistics have been kindly furnished by the secretary:

	Bbls. Received.	Bbls. Shipped.
1884	255,768	184,214
1885	299,407	312,554
1886	255,022	240,134
1887	244,979	360.309
1888	285,013	240,950
1889	298,806	341,346
1890	288,330	333,052
1891	294,222	311,215
1892	309,898	296,796
1893	273,966	274,352
1894	238,055	257,609
1895	240,939	247,702
2896	228,363	220,666

Estimated value of machinery and plant, $110,000. Nineteen men employed.

PETROLIA OIL CO.

Incorporated 31st January, 1881. Authorized Capital, $40,000, divided into 1,000 shares of a value of $40 each, of which $20,040 has been subscribed and paid up.

Directors:

Robert D. Noble.
John D. Noble. | Charles Jenkins.

Head Office: Robert D. Noble, President, Petrolia, Ont.

This company owns 22 acres of land, situate in the Township of Enniskillen, in the County of Lambton, in the Province of Ontario. It also operates 48 wells, each of an average depth of 460 feet, and yielding in the aggregate six barrels of crude oil per diem. The company also manufactures the celebrated "Jacques Cartier" brand of refined oil; also refined benzine, gasoline and lubricating oils, at Petrolia, Ont.; and they have made arrangements for barreling oil at Ottawa and Montreal for distribution in those districts. They also do a large lubricating oil business. Fourteen men employed. Estimated value of machinery, plant, buildings, etc., $13,000.

PRODUCTION OF CRUDE OIL TO DATE.

1883	3,314 Bbls.	1890	1,051 Bbls.
1884	2,518 "	1891	1,346 "
1885	1,860 "	1892	930 "
1886	2,090 "	1893	918 "
1887	1,653 "	1864	876 "
1888	1,626 "	1895	1,871 "
1889	1,723 "	1896	1,989 "

Managing Director: John D. Noble, Petrolia, Ont.

PROVINCIAL NATURAL GAS AND FUEL CO. OF ONT., Ltd

Incorporated 1890, under letters patent from the Federal Government of Canada. Authorized Capital, $300,000, in shares of $50.

Directors :

Hon. Peter McLaren, Perth, Ont., *President.*

N. A. Coste, Amherstburg. | D. McGillivray, Port Colburne.
Daniel O'Day, New York. | Samuel Rogers, Toronto.
C. N. Payne, Oil City, Pa. | E. Strong, Oil City, Pa.

Head Office : D. W. Vaughan, Sec.-Treas., 53 Coal and Iron Fxchange Bdg., Buffalo, N.Y. D. A. Coste, Manager.

The company now holds under lease a property containing about 15,000 acres in the County of Welland. Total wells drilled 124, of which 65 are connected to the two 8-inch pipe lines to Buffalo, N.Y., Fort Erie, and Bridgeburg, Ont. Pump station ereected in 1893 in the gas fields near Sherkston, Ont., and used in 1894 ; discontinued in 1895, and not in use at date. The plant consists of six 100 h.p. boilers and two Norwalk gas compressors 26x30 inches. Pump and boiler houses are lighted by electricity from company's dynamo, and natural gas used under boilers. The company at 1st January, 1897, owned 125 miles of pipe lines of a size varying 8 to 1 inch. In Buffalo the gas is sold to the Buffalo Natural Gas Fuel Co., who in turn sell it to private consumers in the city at the rate of 25 cents a thousand. The Buffalo Company has been selling natural gas in Buffalo since 1886, when they completed a line 90 miles long from several fields located in Pennsylvania. Both the Canadian and Pennsylvonia lines are now furnishing gas simply with the natural rock pressure of the gas.

QUEEN CITY OIL CO., Ltd.

Formerly carried on business under the title of the Samuel Rogers Oil Company. Re-organized 1896. Paid up Capital, $200,000.

Directors :

Joseph P. Rogers. | Samuel Rogers. | Albert S. Rogers.

Head Office : 30 Front Street, Toronto.

Conducts a manufacturing and jobbing business at Toronto, the premises being known as the Queen City Oil Works, and is associated with a group of firms operating in the Petrolia and Oil Springs fields. The trade of these joint concerns is stated to be about 85,000 barrels of refined oils, Canadian and American ; and 50,000 barrels of lubricating and other oils. The firm are partners in the refinery of Fairbanks, Rogers & Co., of Petrolia, and market all its products. Other associate firms are : The Rogers & Morris Co., Ltd., Ottawa ; Rogers, Robertson & Co., Montreal ; Hamilton Oil Co., Hamilton.

STANDARD OIL AND GAS CO. OF ESSEX, Ltd.

Incorporated 1894. Authorized Capital, $400,000, in shares of $100.

Directors:

C. Currie. | J. B. Moore. | F. P. Byrne. | E. E. Harris.
A. H. Clarke.

Head Office: A. H. Clarke, Secretary, Windsor, Ont.

Formed to drill and operate for petroleum, oil and gas, etc., the operations to be carried on in the Counties of Essex and Kent, in the Province of Ontario. The company has drilled 14 gas wells. Of these 6 were good powerful wells; 2 produced oil in small quantities; the remaining 6 were unproductive. The company proposes to continue operations and develop the resources of the property.

STRATHROY PETROLEUM CO., Ltd.

Incorporated 1894. Authorized Capital, $90,000, in shares of $100.

Directors:

G. A. McGillivray. | Dr. W. B. Lindsay, *President.* | Chas. Grist.

Head Office: Chas. Grist, Secretary-Treasurer, Strathroy, Ont.

Owns and operates about 100 oil wells, averaging in depth about 500 ft., in the Petrolia District, Lambton County, Ontario. Small force employed.

TILBURY PENINSULAR OIL AND GAS CO., Ltd.

Incorporated 1895. Authorized Capital, $20,000, in shares of $50.

Directors:

W. C. Crawford. | C. C. Kippen. | F. M. Scarff. | Geo. E. Gurd. | N. Mills.

Head Office: F. M. Scarff, Secretary, Tilbury, Ont.

Formed to search for oil, natural gas, etc., in the Province of Ontario. Holds under lease some 9,000 acres in the Counties of Essex and Kent. Operations to be begun in the Spring of 1897.

WALLACEBURG GAS AND OIL CO., Ltd.

Incorporated 1896. Authorized Capital, $40,000, in shares of $50 each.

Directors:

D. A. Gordon. | John Cooper. | J. W. Steinhoff.

Head Office: Wallaceburg, Ont.

Formed to drill for gas and petroleum in the Province of Ontario. The operations are to be carried on in the Townships of Dover, Chatham, Sombra, and the Town of Wallaceburg.

ASBESTOS.

Varieties.

The fibrous material known to commerce under the name of asbestos comprises at least two distinct species of minerals, one of which—a variety of hornblende, is properly called asbestos; the other is chrysotile, a variety of serpentine, and may be readily distinguished from asbestos by yielding water when heated in a closed tube. Both asbestos and chrysotile are found in regions of altered crystalline rocks, and yet each has its own particular associates. The former occurs with metamorphic rocks rich in hornblende, while the latter is found in distinct veins penetrating masses of serpentine.

Character and Occurrence.

The mineral which is produced in Canada at the present time properly belongs to the chrysotile variety. This occurs in veins in certain portions of the great belt of serpentine rocks of the Eastern Townships of Quebec, though in the serpentines of the Laurentian the mineral is found in small veins, but not as yet in a quantity to be economically available, though subsequent exploration in this direction may disclose workable deposits there as well. In the Laurentian rocks of certain areas, however, the variety actinolite sometimes forms hilly masses of considerable size, which has been mined for several years, and while not as yet found to be suitable for the manufacture of mill-board and the finer qualities of steam packing, answers admirably for cements, paints, etc., in the same way as the tremolite of the State of New York; these deposits of actinolite are therefore highly important, and will without doubt increase rapidly in value.

Although of such recent date, the Eastern Townships asbestos, for the name may be well retained, has now a world-wide reputation, and is shipped in large quantities to the various countries in Europe, England, Italy, Germany and Belgium, and to the United States also, and of the many firms now engaged in its manufacture, the greater portion draw the bulk of their raw material from a small area in Eastern Quebec; the Italian mines, from which the asbestos was formerly obtained, being worked with far greater difficulty than those in Canada, while the supply of the mineral is much more uncertain, and although for certain special lines the Italian may be more valuable than the Canadian, the latter has been found of sufficient value for most purposes, so as to almost entirely supplant the former, even with those firms who control the output of the Italian mineral, a fact evidenced by the purchase of a Canadian property by the United Asbestos Co. of London, Eng.

Eastern Townships.

Although asbestos was known at many points in Eastern Quebec more than thirty years ago, and was exhibited at the International Exhibition in London in

1862, no attempt was made to work the mineral for some years. The credit of the discovery of the Thetford area is probably due to a French-Canadian named Fecteau, and following up his discovery certain areas were secured from the Government by private parties. The true value of the mineral was not at first recognized, and in the first year of mining operation (1878) only 50 tons were taken out, for which a ready sale was not at first obtained. The importance of the discovery was, however, speedily ascertained, and new companies obtained tracts of rocky land in the Townships of Thetford and Coleraine, and began the work of exploration and mining. Had the government of Quebec at that day been in possession of the requisite information regarding its mineral lands, it is very probable that the thousands of acres which rapidly changed hands in that section of the province would have brought in much greater returns than the usual Government rate. Curiously enough, however, though the areas of the serpentine in the Townships of Thetford, Coleraine, Ireland and Wolfestown are very extensive, the portions in which the mineral asbestos is found are comparatively rare, and the mining though now prosecuted for fifteen years, is practically confined to two small sections about four miles apart. The first, and as yet the most important of these, is a small mound near the Thetford station on the Quebec Central railway, which rises about 80 to 90 feet above the track ; the other, the bold ridge of brownish-looking rock to the south-east of Black station, which assumes much greater prominence, and probably has an elevation of 650 to 700 feet above the railway at this point. It must, however, be said in regard to some of the areas of serpentine that lack of sufficient exposures, owing to soil and forest growth, prevents in many cases a careful search, but in other portions where the bare rock is well exposed, as on the great ridge of Ireland and Wolfestown, as well as much of that towards Lake Caribou and Little St. Francis, much of the rock has a hard reddish-brown weathered surface which does not promise favorable results to the prospector, who from a comparatively brief experience can very generally decide, with a fair amount of assurance, whether certain areas are likely to prove of value or not as a source of supply for asbestos.

The most westerly area in the Eastern Townships in which the mineral is mined is at the Jeffrey mine, four miles east of Danville village, on Lot 9, Range 3, Shipton. The asbestos here occurs in a rounded knoll, one of a series which extends from Melbourne through Cleveland into the south-east corner of Tingwick, and is the only one in which valuable veins have yet been found in this direction. This was first worked in 1884, and has yielded a large amount of asbestos of excellent quality.

Ottawa County.

In connection with the Laurentian rocks of Ottawa County, the serpentinous limestones sometimes carry veins of a pale yellowish asbestos, generally of short fibre, but at times having a length of three-fourths to one inch. In some pieces of rock several of these, six, eight or more, are found, occupying a breadth of ten to twelve inches, the thickness of the veins ranging from one-fourth of an inch upward. Few attempts have, in so far as can be learned, been made to work these asbestos veins, some of which, as in Templeton, might, if they were continuous to any extent, afford

material of second and third quality, the fibre having scarcely a sufficient length to class it as first. Both the serpentine and asbestos of the Laurentian rocks differ in quality from that of the Eastern Townships, as might indeed be supposed from their mode of occurrence and from the associated rocks. In connection with some of the phosphate deposits, as at the Emerald mine on the Lievre in Buckingham, considerable masses of the variety of asbestos known as mountain cork are found, but this has yet no economic value.

Compared with Italian.

The composition of Canadian asbestos in comparison with the product of Italian mines is shown by the following analysis by Donald :—

	Asbestos.	
	Canadian.	Italian.
	Per cent.	Per cent.
Silica	40.57	40.30
Magnesia	41.50	43.37
Ferrous oxide	2.81	.87
Alumina	.90	2.27
Water	13.55	13.72
	99.33	100.53

Uses of Asbestos.

It is clear that a mineral which has been successfully exposed to a heat of 4,500 to 5,000 degrees F., which is a non-conductor of electricity, and which may be spun like cotton and flax, has merits in itself and will stand on those merits. The uses of asbestos are steadily increasing. It is used in the manufacture of fire-proof paints, roofing, piston packing, felt packing, fire-proof cements, sheet and roll millboards, flooring, and for a covering for steam pipes and boilers. It is largely used in lining for fire-proof safes, and is also made into yarn, cloth and paper.

One of its special uses is for wall plaster. This is a new application which will have a distinct effect in modifying the practice of indoor plastering. Instead of the ordinary tedious and elaborate preparation of studs and strips, and the use of inferior and dust-creating mortar, with it after scoring, which is necessary to give cohesion to the final coat of plaster of Paris, a single coating of the asbestos is laid on. It has a glossy surface that will not crack, as, while firm, it is perfectly flexible. It can be put on the raw brick ; and a room of which the walls have been built in the morning can, before night, have a smoothly finished interior surface, shining like glass and hard as a rock. A kindred application of asbestos is now coming into vogue in the shape of uninflammable decorations for walls and ceilings.

These are used a great deal for the saloons of steamships. They are embossed in very beautiful designs, and can be treated with gold, varnish, lacquers, or any other substance, for the enhancement of their ornamental effect.

Firemen clad in asbestos clothing and masks, as are those of London and Paris, can walk through the hottest flame with comparative impunity. Asbestos fire-proof curtains have reduced the mortality of theatre fires in a very appreciable degree. In torpedoes, the difficulty of dealing with the charges of wet gun-cotton is overcome by enclosing them in asbestos, the employment of which has also, in a great measure, brought the dynamite shell to its present efficiency. Asbestos is made into a cloth avaiable for aeronautical purposes. A balloon made of this uninflammable material escapes one of the most terrible dangers to which an ordinarily constructed balloon is liable. Probably one of the first applications of asbestos in this country was to roofing. To buildings covered with this material, the shower of sparks from a neighboring conflagration involves no danger. The fact that woodwork can, by its use, be made uninflammable has come to be an important factor in the insurance of buildings. One of the largest branches of asbestos manufacture is that of sectional cylinders for pipe-coverings, for retaining the heat of steam and other pipes, felt protective coverings for boilers, frost-proof protections for gas or water pipes, and cement felting, which can be laid on with a trowel, for the covering of steam pipes, boilers or stills. In some of these cases, where it is only necessary to retain the heat, the asbestos is mixed with other substances, but where the protection must be fire-proof as well, only asbestos is used. The utility of such a covering is well illustrated in the heating system of railway cars. The main pipe, from which the individual cars draw their respective heat supplies by side mains, if not covered with asbestos, would loose a large proportion of its caloric from the rapid motion of the car through the air. An interesting innovation in this class of manufacture is asbestos sponge. It is not generally known that sponge has great powers of fire resistance. The discovery was made accidentally, not long ago, and the result was that a consignment of scraps of sponge picked up on the southern coasts was ordered for experimental purposes The sponge was finally comminuted and mixed intimately with asbestos fibre. The combination was found so successful for any covering which had to be fire-proof as well as heat-proof, that the material has become standard. Being full of air cells, it necessarily makes an excellent non-conductor. Another very extensive department in asbestos manufacture is that of packings. Of these there are an infinite number of forms. In these days of high pressures and ocean records it is of supreme importance to marine engineers that they should have jointing and packing materials on which absolute reliance can be placed. In order to meet modern exigencies, every possible form of packing has been constructed, particularly with asbestos and metallic wire, and with asbestos and rubber cores for gland packing. The making of asbestos paper varies from the building up the thickest millboard to the production of a writing paper which, from its indestructability, is invaluable in case of fire for preserving charters, policies, agreements and other important documents.

To the electrical engineer asbestos is absolutely indispensable. Many parts of electrical devices and machinery and wires through which the

electrical current passes become heated, and were it not for the electrical insulation and heat-resisting qualities which asbestos possesses, the apparatus would be completely destroyed, particularly in the case known to electricians as "short circuiting." For such purposes it has been found advisible to combine asbestos with rubber and other gums, and this combination is now used universally for not only electrical, but also steam and mechanical purposes.

A considerable part of an asbestos factory is devoted to weaving, the asbestos being first drawn into thread for that purpose. Here, again, is an apparently endless diversity. There is the fire-place curtain-blower, which, with an automatic spring roller attachment, takes the place in the frame of the fire-place of the less sightly sheet-iron blower; and filtering cloths for many purposes, from straining molten metal to clarifying saccharine juices in beet root sugar refineries. A cloth is made for straining and filtering acids and alkalies in chemical laboratories. This is specially useful when the liquid to be treated is of a caustic or strongly acid nature. The filter can be thrown into the fire, and after the residual matter has been consumed the web is as good as new. For filtering purposes generally, asbestos has a unique adaptability, and in tropical countries it is held in grateful estimation as a cooler and purifier of water. The newest departure in the asbestos field is the construction of electrothermic apparatus. The heating effect of the electric current is utilized by embedding the wire in an asbestos sheet or pad. The pad is used by physicians and nurses for maintaining artificial heat in local applications, and it is said to be already largely used in hospitals. Another application of the same principle is to car heaters. A sheet of asbestos with the embedded wires, is clamped between two thin steel plates, and the portable heater thus provided, or a series if need be, is connected to the car circuit quickly and easily. It gives an even and healthy heat, and can be so regulated as not to overheat the car.

Production.

(Geological Survey of Canada.)

Year.	Tons.	Value.	Year.	Tons.	Value.
1880	380	$ 24,700	1889	6,113	$ 426,554
1881	540	35,100	1890	9,860	1,260,240
1882	810	52,650	1891	9,279	999,878
1883	955	68,750	1892	6,082	390,462
1884	1,141	75,097	1893	6,331	310,156
1885	2,440	142,441	1894	7,630	420,825
1886	3,458	206,251	1895	8,756	368,175
1887	4,619	226,976	1896	12,250	429,856
1888	4,404	255,007			

Railway Shipments, 1881–1894.

The following returns have been courteously furnished by Mr. J. H. Walsh, General Passenger Agent of the Quebec Central Railway, showing the quantities

shipped from the mines at Thetford, Black Lake and other stations on the line of this railway:—

1881— 6 months ending Dec. 31st	.....	617,635 lbs.
1882—12	"	"	.....	1,358,820 "
1883—12	"	"	.....	1,429,850 "
1884—12	"	"	.....	1,935,525 "
1885—12	"	"	.....	2,735,140 "
1886—12	"	"	....	4,306,925 "
1887—12	"	"	....	6,962,875 "
1888—12	"	"	....	8,030,950 "
1889—12	"	"	.....	11,747,580 "
1890—12	"	"	.....	15,651,250 "
1891—12	"	"	.....	14,672,180 "
1892—12	"	"	.....	8,674,560 "
1893—12	"	"	.....	10,677,900 "
1894—12	"	"	.....	14,683,055 "

The following shipments were reported for the years 1895–1896 :

—	1895.	1896.
	Tons.	Tons.
From Black Lake *via* Quebec Central Ry.....	735½	996
" Thetford Mines *via* " "	5,235¼	4,640
" Danville *via* Grand Trunk Ry.....	2,310	4,939
" Township of Low *via* Gatineau Valley Ry....	35	172
" Broughton *via* Quebec Central Ry.....	.....	63
" Pointé au Chene	....	784
Total.....	8,315¾	11,594

AMERICAN ASBESTOS CO., Ltd.

In Liquidation.

Liquidators :

Penhale and Burrage, Sherbrooke, Que.

At date of going to press the property and plant were advertised for sale.

ANGLO-CANADIAN ASBESTOS CO., Ltd.

Registered 14th August, 1889. Authorized Capital, £20,000 in shares of £1, of which £11,490 has been issued and paid. There are also 6 per cent. debentures to the amount of £4,034, repayable 15th September, 1904. The accounts are made up annually to December 31st, and submitted in March.

Directors :

R. T. Hopper, *President.*

H. F. Watson. | H. W. Paul. | R. W. Potter.

R. H. Holland.

CANADIAN OFFICE :

R. T. Hopper, President and Managing Director, 314 Board of Trade Building, Montreal.

English Office : 15 Poultry Chambers, London, E.C.

This company owns and operates certain asbestos lands in Block A, Coleraine, in the Province of Quebec. Mines located about one-quarter of a mile from Black Lake Station, on the line of the Quebec Central Railway. Engine equipment comprises : 1 Duplex Rand 5-drill air compressor, Ingersoll and Beatty hoists, 1 Northey and 1 Valley Machine Co. pump, one 60 h.p. and one 35 h.p. boiler, 4 derricks, etc. Well equipped with building accommodation. Also mines chromic iron.

ASBESTOS AND ASBESTIC CO. Ltd.

Registered 1897. Authorized Capital, £500,000 in 50,000 shares of £10 each.

Directors :

Gilbert Bartholomew, *Chairman.*

Wilberforce Bryant. | Andrew A. Allan.
A. Naylor. | R. H. Martin.
Henry Hayman. | Feodor Boas.

CANADIAN OFFICE :

Feodor Boas, Managing Director, Danville, Que.

Head Office : H. L. Truman, Secretary, 13 St. Helen's Place, London, E.C.

Formed to acquire and work the Jeffrey asbestos mine and other freehold property at Danville, in the Province of Quebec, as follows :—

"Under Contract No. 1, for the consideration of 16,666 fully paid shares of £10 each, and £283,340 in cash, the vendors undertake to transfer to the company free from all mortgages and charges :—

1. The freehold asbestos property, about 75 acres in extent, with the factories and buildings situate thereon, and the plant and rolling stock, supplies and tools.

2. Six hundred acres of freehold land with growing timber, near Danville, with saw mill and slate quarry, and about 200 acres of freehold land, with the buildings, mechinery and dwelling-houses thereon.

3. The options on the water rights recently acquired by the vendors on the river Nicolet, and all such rights of way as the vendors now have, together with the right to take over their charter, recently obtained, for the proposed branch railway."

The mine is at present worked by three pits, but these will shortly be opened together, making a working face of at least 1,000 ft. long by about 100 ft. high. The material is raised from the pits and carried by a cable-way and derricks worked by

large winding engines, direct to a large and well appointed mill thoroughly equipped with a plant of modern construction, comprising crushing, sorting, drying, pulverizing and separating machinery.

The following description of the works is excerpted from the published reports of the company:

"A private company (the Danville Asbestos and Slate Co.) purchased the property in November, 1894. Shortly afterwards a contract was made with the H. W. Johns Manufacturing Company of New York (the largest users of Asbestos in the United States), to supply them with 20,000 tons of asbestos of various grades over five years, at prices averaging $30 per ton, the annual output previous to this having been but a few hundred tons. Before definitely entering into this contract and preparing to invest large sums of money in new paper-making and other machinery for the production of asbestos goods, the Johns Company sent two experts to examine the property, who reported very favorably, and their opinions have since been verified by the actual results obtained. On the above contract being entered into, an extensive factory was erected on the side of the knoll, and special automatic machinery fitted up for the purpose of disintegrating the rock, the factory being completed in July, 1896; but during the time the machinery was being perfected, and up to November last (a period of sixteen months), upwards of 10,000 tons of asbestos was produced and sold.

The factory, which is capable of producing over 200 tons of asbestos and 1,000 tons of asbestic per week, has been built in five floors, and has been arranged with a view to handling the raw material as little as possible. The rock is blasted in the quarries and conveyed to a large crusher at the top of the factory. It then passes automatically through various stages, and by means of the special machinery the long fibres of asbestos are extracted, sifted, graded, and packed in bags, as is the residue, which is asbestic. The whole process occupies but 20 minutes, at a cost of a few shillings per ton for both asbestos and asbestic, while it is believed that no other asbestos property in the world is producing marketable asbestos at such a price as will enable it to compete except at ruinous loss.

The short material known as asbestic forms, with lime or cement, a wall plaster more adhesive and cohesive than any other in use. Owing to asbestos being of fibrous nature, such plaster adheres to any surface, and does not crack or crumble. It is absolutely fire-proof, and was tested by United States Government officials at Washington in July last with the most remarkable success. It can be used both for the outside of buildings and for interior walls. It is a non-conductor of heat, hence it will effect a saving of fuel. Furthermore, it forms a plastic material, which can be decorated as soon as dry, or, to save tinting or painting of walls, it may be mixed with any color before being applied.

The Johns Company having purchased from the Vendor Company no less than 5,087 tons of asbestos between 1st May and the 14th November, 1896, although the contract for 20,000 tons only required them to take 3,000 tons during the whole of the first year. New contracts have just been entered into (the old contract being cancelled), whereby the Johns Company engages to take for three years (with option to renew), a minimum of 8,500 tons per annum of asbestos of various grades, at prices averaging about $30 per ton; and 50,000 tons of asbestic during the first year, 75,000 tons during the second year, and 100,000 tons during the third year, at the price of $3 per ton delivered on car at Danville, the Johns Company having the right to form a separate company to take over and work the asbestic contract.

The company has many other customers whose full requirements cannot be dealt with until the output has been considerably increased. Amongst these customers may be mentioned the United Asbestos Company, Limited, of London, who, having had a sample of twenty tons in the month of December last, have given a large order for delivery during the present year.

To supply these contracts will take almost all the present capacity of the factory, and in order to deal with the European and markets outside the United States and Canada, it is proposed to at once duplicate the plant and machinery, for which there is ample room in the existing buildings, so that within eight months the output should be raised to upwards of 400 tons of asbestos and 2,000 tons of asbestic per week.

It is intended to build further factories to increase the output as demand arises, as it is believed that the asbestos rock in the property is practically inexhaustible, and that at low prices the demand will rapidly increase,

The Vendors have arranged to secure abundant water power on the Nicolet River (about half a mile from the knoll), where there is a fall of about 180 feet, and it is proposed to put in turbines and generate electricity, to be conveyed to the property and used to supply the whole of the power and light required, and thus avoid expensive steam power.

It is estimated that the earning power of the present plant, based upon the actual results certified by Messrs. Turquand, Youngs & Co., and upon the contracts for sales, show a profit of over 10 per cent. on the capital of the company. The directors do not think it necessary to put forth any estimate of further profits on increased output, but very large returns may be confidently anticipated."

ASBESTOS MINING AND MANUFACTURING CO.

Incorporated April, 1895. Authorized Capital, $50,000 in shares of a value of $100.

Directors:

J. Smith. | John L. Armitage. | R. Burrage. | E. Hammell.

Head Office: John L. Armitage, Treasurer, Prudential Bdg., Newark, N.J.

Owns and operates an asbestos property containing 140 acres in the Township of Low, Ottawa County, Province of Quebec, on which from 20 to 30 persons were employed in 1896.

BEAVER ASBESTOS CO., Ltd.

Incorporated 1890, under Letters Patent from the Local Legislature of the Province of Quebec. Capital, $100,000, in shares of $100 each.
Fully subscribed and paid up.

Directors:

R. H. Martin, New York, *President.*

H. D. Lawrence. | Jas. S. Mitchell, Sherbrooke, *V.-Pres.*
J. W. Woodside. | H. J. Williams, Danville, Que.

Head Office: J. W. Woodside, Secretary, Sherbrooke, Que.

Formed to acquire and work asbestos and other mineral lands in the Province of Quebec, more particularly Lots 31, 32, Range C, Coleraine, in the County of Megantic, Que. Mines situated about half a mile from Thetford Station on the Quebec Central Railway. Machinery comprises: 2 boilers, 125 h.p.; 1 single drum and 1 double drum hoist and 1 winding engine, built by the Jenckes Machine Co.; 4 boom and 1 cable derricks; 4 steam drills (Rand); 1 Blake and 2 Northey steam pumps, etc. Well equipped with suitable buildings.

BELL'S ASBESTOS CO., Ltd.

Registered 4th May, 1888. Authorized Capital, £200,000 stg., in shares of £5, £120,000 stg., of which has been allotted and paid up in full. In 1895 the Capital was reduced to £200,000 in 200,000 shares of £1. Accounts to December 31st submitted in February. Dividends for 1888 and 1889, 22½ per cent. each year; 1890, 15 per cent.; 1891, 10 per cent.; 1892, 7½ per cent.; 1893, 5 per cent.; 1894, 10 per cent.; 1895, 10 per cent.

Directors:

Hy. Heywood, *Chairman.*

T. B. Lightfoot. | H. A. Bell. | A. J. Burnett.

CANADIAN OFFICE:

George R. Smith, M.L.A., Manager, Thetford Mines, Que.

Head Office: Geo. W. Giles, Secretary, Southwark Street, London, S.E.

Formed to take over the business of Messrs. John Bell & Son, and to buy and work the freehold deposits of asbestos at Thetford, Hayden and Belmina, and elsewhere in the Townships of Thetford and Coleraine, Province of Quebec. The purchase price for these properties was: Belmina, £8,394; Thetford at £41,300 stg., and Hayden at £8,000 stg. Mines at Thetford Station on the Q.C. Ry. 280 persons employed. The machinery equipment at date comprises:—

Boilers—Three 20 h.p., two 100 h.p., two 60 h.p., one 150 h.p.

Air compressor—One Norwalk, 12 drill capacity.

Hoisting Engines—Three Ingersoll and four Bacon in place; cyl., 8¼ x 10 in.; diameter of drum, 24 x 36 in.

Rock Drills—Nine in place; six Sergeant, 3¼ in; three Ingersoll, 3¼ in.

Derricks—Three cable and five boom.

Pumps—Five in place, Blake and Worthington.

Rock Breaker—One Gates.

Asbestos mill equipped with a first-class plant for mechanical separation of asbestos, including rolls, crushers, picking tables, screens and a cyclone mill.

Works lit by electrictity.

The following is excerpted from the annual report submitted to the shareholders 26th March, 1897, being for the year ended 31st December, 1896:—

The result of the year's operations is a net profit of..	£9,767	15	5
To which has to be added the amount brought forward	2,200	4	10
	£11,968	0	3
Under the terms of paragraph 105 of the Articles of Association the Directors place to Reserve Fund	4,000	0	0
Leaving for Appropriation	£7,968	0	3

The directors recommend:—

1. The payment on the 8th April of a dividend at the rate of 5 per cent. per annum, free of income tax.
2. To carry forward £1,968 0s. 3d.

BALANCE SHEET, 31ST DECEMBER, 1896.

DR.

	£	s.	d.	£	s.	d.
To Share Capital:—						
Authorized 200,000 Shares of £1 each.....	200,000	0	0			
Issued 120,000 Shares of £1 each fully paid.....				120,000	0	0

To Mortgage Debentures:—						
(charged upon the undertaking)						
535 Bonds of £100 each	53,500	0	0			
Interest	1,337	10	0			
Premium on Bonds drawn for payment	345	0	0			
	55,182	10	0			
Deduct Cash lodged with Trustees for redemption of Bonds	2,729	18	5			
				52,452	11	7
To Creditors:—						
On Bills payable	1,452	3	4			
On open Accounts	15,105	11	3			
				16,557	14	7
To Reserve Fund				61,000	0	0
To Machinery Reserve Fund				2,500	0	0
To Profit and Loss Account:—						
Balance from Account, 31st December, 1895	2,200	4	10			
Balance from Account for the Year	9,767	15	5			
				11,968	0	3
To Liability on Bills Receivable discounted	2,180	3	7			
				£264,478	6	5

Cr.

	£	s.	d.	£	s.	d.
By Cash:—						
At Bankers, on Current Account	2,890	2	4			
In hand	24	4	10			
				2,914	7	2
By Bills receivable on hand				19,496	18	7
By Debtors				36,521	0	6
By Sundry Shares				1,267	3	0
By Stock in Trade:—						
London	18,629	11	5			
Asbestos Estates	5,046	14	4			
				23,676	5	9
By Plant, Machinery Lease, Fittings, Fixtures and Furniture				12,093	0	6
By Asbestos Estates, Canada, and Buildings, Machinery and Sundries thereon, at cost				73,630	13	1
By Freehold Premises, Southwark Street	50,776	19	2			
Less Mortgage thereon	25,000	0	0			
				25,776	19	2
By Amount paid for Goodwill, Patents, and Trade Marks of the business of John Bell & Son				69,101	18	8
				£264,478	6	5

Profit and Loss Account for the Year Ending 31st December, 1896.

	£	s.	d.
To Interest on Debentures, and on Mortgage on Freehold Premises	3,675	0	0
To Remuneration of Directors and Managing Director	2,042	10	6
To Premium on Debentures drawn for payment	345	0	0
To Balance carried to Balance Sheet	9,767	15	5
	£15,830	5	11

	£	s.	d.
By Profit of the Year	15,772	3	11
By Transfer Fees	58	2	0
	£15,830	5	11

GLASGOW AND MONTREAL ASBESTOS CO., Ltd.

Registered in Edinburgh, Scotland, 23rd July, 1891. Authorized Capital, £70,000, divided into 35,000 preferred and 35,000 deferred shares of £1 each. The preferred shares rank first for non-cumulative dividends of 7 per cent. per annum, and take one-half the surplus profits, the remaining half going to the deferred. The preferred shares have also a priority as to capital.

CANADIAN BOARD:

E. Hanson, Montreal.

E. B. Greenshields, Montreal. | William Ramsay, Montreal.

Glasgow Board:

R. E. Aiken, C.A. | Wm. Jacks, M.P. | W. H. Kidston.

Canadian Office: Black Lake, Que.

Scottish Offices: Messrs. Mackenzie & Aiken, C.A., Secretaries, 68 St. Vincent Street, Glasgow.

Formed to adopt and carry out an agreement with Robert Easton Aiken, chartered accountant and stock broker, in Glasgow, providing for the purchase by the company of the properties, mining rights and others, including the Martin mines in the Township of Coleraine, Megantic County, and the Fraser mines in the Township of Broughton and County of Beauce, both in the Province of Quebec, with all the mining machinery, plant, tools and other personal property and the whole other rights, members and appurtenances; to carry on the business of asbestos producers, manufacturers, and merchants, of a mineral or mining company in all its branches. The property owned and operated was formerly worked by the Scottish-Canadian Asbestos Company. Work commenced in May, 1891, by present company, 200 persons employed Engine equipment: Two 60 h.p. boilers; one 16 x 24 Ingersoll straight line 7-drill air compressor; two 8 x 12 Bacon winding engines; Blake and Cameron pumps; two small hoists, etc., etc. Mill building contains 60 h.p. boiler, horizontal Brush engine, Blake crusher, set 24 in. Cornish rolls, revolving picking tables, Sturtevant double exhaust blower, screens, etc., the whole at an estimated value of $50,000.

JOHNSON'S CO.

Incorporated 1885, under letters patent from the Local Legislature of Quebec. Capital, $250,000, in shares of $500 each, fully subscribed and paid up.

Directors:

John Mooney, Inverness, Que. | W. J. Johnston, Clapham, Que.
Samuel J. Johnson, Inverness, Que. | A. S. Johnson, Thetford, Que.

Head Office: A. S. Johnson, Managing Director, Thetford, Que.

Formed to acquire and work asbestos and other mineral lands in the Province of Quebec, particularly Lot 27, 6th Range of Thetford, and Lots 25 and 26 in the 10th Range of Ireland; also Lots 25, 29, 30, in Range 3 of the Township of Coleraine, all in the County of Megantic.

Engine equipment includes steam drills, horizontal and upright boilers, pumps, single and double hoisting engines, and a complete crushing and separating plant.

KING BROTHERS.

A private company, consisting of the following partners:—

Chas. King. | James King. | E. A. King.

Head Office: 15 Bell's Lane, Quebec, Que.

This company is one of the largest producers of crude asbestos in Canada, and is the owner of some 21,000 acres of mineral lands in the Townships of Thetford and Ireland. Thetford mines at Thetford Station, on the line of the Quebec Central Railway; on an average about 200 persons employed. Engine equipment includes Rand compressor (7 drill), three Copeland & Bacon hoisting engines, steam pumps, cable derricks, etc. Output for 1889, about 1,500 tons all grades; 1890, 1,050 tons all grades; 1891, 925 tons; 1892, 550 tons; output in 1893, 400 tons; output in 1894, 550 tons; working only one pit; 1895, 850 tons.

REED ASBESTOS MINE.

Sole Owner:

Dr. James Reed, Reedsdale, Que.

The properties owned cover 300 acres, and are known as Lots 27, 28 and 29, Range A, Coleraine, Que. The engine and machinery equipment at date includes: two 60 h.p. boilers; one 16 x 24 Ingersoll air compressor; seven 3⅛ in. Ingersoll rock drills; one double drum Ingersoll hoisting engine, and the necessary pumps, air receivers and attachments to make the plant complete, the whole being of a value of $12,000. Dr. Reed is also owner of 20,000 acres of mineral lands in Coleraine, Thetford and South Ham, containing antimony, asbestos, copper and chromite.

UNITED ASBESTOS CO., Ltd.

Registered 1st November, 1880. The Capital is £9,970, in fully paid 10 per cent. non-cumulative preference shares of £10, £30,000 in 6 per cent. cumulative preference shares, £49,875 in fully paid ordinary (A) shares of £5, and £50,000 in fully paid deferred (B) shares of £5. The "B" shares were issued as fully paid up to the subscribers of "A" shares. All the shares were originally of £10, but at the end of 1883 it was decided to write off £5 per share from the ordinary and deferred capital (the preference not having then been issued). After payment of the preference dividend the ordinary shares rank first for a cumulative dividend

of 14 per cent. per annum. The deferred shares then take 14 per cent., surplus profits to be divided equally between the ordinary and deferred. There are also loans on mortgages, etc., to the amount of £39,000.

Directors:

E. Gellatly, *Chairman.*

H. A. Allport. | E. Elias. | J. P. Hurst. | J. R. T. Upton.

Head Office:

J. A. Fisher, *General Manager,*
J. Hawkridge, *Assistant* " } Dock House, Billiter Street, London, E.C.

CANADIAN OFFICE:

John J. Penhale, Superintendent, Black Lake, Que.

Formed in 1880 to take over the business of the Italo-English Pure Asbestos Co., Ltd., the asbestos mines and business of Messrs. Furze Bros. & Co. of Rome, the Patent Asbestos Manufacturing Co., and to acquire and work asbestos estates in Italy, Canada, and elsewhere. In 1889 it purchased the property formerly worked by the Frechette Mining Co., containing some 75 acres of asbestos lands situate in Block A, Township of Coleraine, Province of Quebec. Mine located about one quarter of a mile from Black Lake station on the line of the Quebec Central Railway. An average force of 150 men and boys employed. Engine and machinery equipment comprises: two 70 h.p., one 50 h.p. and one 25 h.p. boilers; one 16 x 24 straight line Rand compressor with the necessary equipment; one 7 x 10 in. duplex double drum Bacon hoisting engine; 7 x 12 x 15 in. duplex double drum Beatty hoisting engine, and one 12 x 15 x 60 in. duplex winding engine, with drums flanged for winding 4,000 ft. ⅞ in. rope. Dressing mill, 40 x 75 ft., 3 stories, equipped with 50 h. p. engine, rock breakers, small crusher, roll and fibreizing apparatus. The Bacon winding engine operates tramway 3,800 ft. on the main and tail rope system; tram line was built in 1892 to carry off the dumps to rear of property; Ingersoll and Rand drills; Blake and Cameron pumps, four boom and two cable derricks. The company also operated in 1896 the Broughton asbestos mine, under lease from the Glasgow and Montreal Asbestos Co. The work has been more in the nature of opening and developing new ground.

MICA MINING.

The occurrence of mica in economic qualities is now known at various points over a very extended area. Thus in Ontario the mines of Burgess and the adjacent townships yield large quantities, generally of the phlogopite variety. Along the Ottawa river it is found from a point nearly 100 miles west of Ottawa, to the township of Grenville, 60 miles east of that city; while on the Gatineau river, which flows into the Ottawa at the city of Ottawa, mines have been located and worked for 80 miles north from its mouth, and the mineral is reported from points many miles farther north along that stream. To the east of Quebec it is known on the branch of the Saguenay called the Manonan, and in the Townships of Escoumains, Bergeronnes and Tadousac, situated east of the mouth of that river, as well as at several other places along the River St. Lawrence. The mica found in this district is chiefly muscovite. Discoveries of workable deposits are also reported from British Columbia on the Canoe river and Tete Juan Cache Districts.

The principal areas where the mineral is at present worked are in the belt which extends north from North Burgess in Ontario, into the territory adjacent to the Gatineau and Lievre rivers, Ottawa County, Que.

Preparation for Market.

Care is taken in mining to avoid drilling through the mica crystals, or to break them unduly. The blocks hoisted from the mine are sent to the stripping room where extraneous matter, as pieces of quartz, feldspar, wall rock, and fragments of mica are removed. It is then taken to the "mica shop," where it is split with knives into sheets of the required thinness, and afterward sheared into sizes. The workman has on his bench a stationary pair of shears and a large number of blocks or templates of the sizes to be cut. An experienced mica cutter can tell at a glance the largest size which can be cut from a given piece of split mica; he selects the proper template, holds it on the mica, and shears it on the four sides, using each edge of the block as a straight edge. Each size sheared is set away by itself. The sheets are sheared by further scaling, if necessary, and finally packed in paper in pound packages.

One hundred pounds of good block mica may yield 33⅓ pounds cut mica; an inferior block may yield only 5 pounds; the average is 10 to 12 pounds. In the *Mineral Resources of the United States* it is stated that a 100 pound block from the Flat Rock mine, gave 75 pounds of cut mica. This is a record yield, and is very far above the average.

At the factory of the Mica Manufacturing Co. in Ottawa, this hand labor is greatly reduced and a great saving effected by the use of patented cutting machines operated by electricity. This company has twenty-three power presses for cutting

irregular shaped dies and segments. They are of American manufacture ; twenty of them from the E. W. Bliss Co., Ltd., of Brooklyn, N.Y., two made by the Ferracute Machine Co., of Bridgeton, N.J., and the other manufactured by the Long and Allstatter Co., of Hamilton, Ohio. Eighteen of the Bliss machines are the well known Bench presses, and especially suitable for cutting patterns most in demand at the the present time. The dies used in this factory are the most complete at present in use for this purpose, and include some sixteen different patterns, ranging in size from 5¼ x 10 in. to ⅞ x 3 in., and with a few exceptions are all made in Ottawa. In addition to the cutting presses already mentioned, there are in use ten cutting shears for two-siding and cutting material of unusually large size. The production of merchantable sheets is usually from 4 to 5 per cent. of the block mica brought from the mine, and may run as high as 8 or 10 per cent.

Prices of Canadian Mica.

The following are the standard prices for Canadian mica, as adopted by agreement by the producers in 1895, on lots of not less than one ton of 2,000 lbs.

Rough split, edges untrimmed. Run of the mine, to cut :—

Inches.	Per lb.
1x3 to 2x4	$0.06
2x4 to 3x5	15
3x5 to 4x6	25
4x6 to 5x7	60

Rough split, trimmed, to cut :—

Inches.	Per lb.
1x3 to 2x4	$0.10
2x4 to 3x5	25
3x5 to 4x6	50
4x6 to 5x7	1.00
5x7 and up	1.50

Imported by the United States.

Years ending.	Value.	Years ending.	Value.
June 30, 1869	$ 1,165	June 30, 1883	$ 9,884
1870	226	1884	28,284
1871	1,460	1885	28,685
1872	1,002	Dec. 31, 1886	*56,354
1873	498	1887	*49,085
1874	1,204	1888	*57,541
1875	.....	1889	*97,351
1876	569	1890	*207,375
1877	13,085	1891	95,242
1878	7,930	1892	218,938
1879	9,274	1893	147,927
1880	12,562	1894	126,184
1881	5,839	1895	174,886
1882	5,175		

*Including mica waste.

The following statement, kindly furnished by the Treasury Department, at Washington, D. C., shows the principal countries from which the United States imported mica in 1895:—

	Lbs.	
France	1,315	$ 481
Germany	1,544	1,999
England	110,491	33,979
Scotland	359	207
Quebec	546,905	36,401
B. E. Indies	148,056	48,731
Japan	12,000	2,194
British Australasia	312	292
Total	820,982	$124,284

PRODUCTION.

(Geological Survey Returns.)

1886	$20,008	1892	104,745
1887	20,816	1893	69,622
1888	30,207	1894	50,000
1889	28,718	1895	65,000
1890	68,074	1896	60,000
1891	$71,510		

NOTE—All the above values are much underestimated.

INDUSTRIAL USES.

The peculiar physical properties of the micas have secured for these minerals very widely extended uses in the arts—the size of the crystals, their highly perfect cleavage, their flexibility and elasticity, transparency and athermancy, chemical stability and imperfect powers of conducting electricity and properties which no other mineral can combine, and which cannot be readily or cheaply imitated by artificial means.

Electrical Appliances—Mica has been used for vibrating plates in the photophone. Edison has employed it also for vibrating plates in the telephone, and as a substitute for glass in the reflectors of electric lamps. The great factor in increasing the consumption of the mineral has been its demand for use in dynamos, electric motors and other electrical machinery. The insulating power of mica is superior to that of any other substance applicable to armatures. An advantage peculiar to itself is its even laminated structure. A piece of ordinary writing paper is about .005 inch; mica layers have been obtained of a thinness of .00003 inch. Mechanical difficulties prevent its being split thinner. By passing it upon a hard surface and splitting it off as much as possible, the remaining fragments are so thin as to become beautifully irredescent. The builders of armatures can therefore split the sheets into any desired and uniform thickness with great ease and accuracy. A valuable property of mica in connection with commutator insulation is its proper degree or hardness, whereby it does not wear

away too rapidly under the action of the brushes. If rubber was used for example, even if it did not burn, yet it would wear off and sparking result, because the commutator surface would not be truly cylindrical. The brushes would be set into vibration. Again, mica is capable of the finest pulverization, so that any wearing which does take place does not result in the liberation of gritty particles, which would cause sparking. Mica is probably the best material for use in armatures, if it is desired to obtain not only efficient electric insulation, but also durability under the influence of heat.

Mica for electrical purposes must be flexible and non-conductive; color does not matter, but perfect cleavage is of the highest importance, as "electrical mica" must be of uniform thickness, and is often guaged to the thousandth part of an inch. The size of the sheets vary greatly, 450 different patterns being called for. The price is from 10c. to $2.50 and upwards per lb., and varies with the size of the sheet and difficulty of cutting the pattern.

Canadian mica, on account of its superior cleavage, is preferred by electricians, and after gaining a foothold in the United States, it has more than held its own against the local and foreign product.

An instance of this may be cited in the following communication to the Geological Survey of Canada (see *Annual Report Mineral Statistics, 1890)*, which says: "The bulk of mica used by us is Canadian mica, which is known in the market as 'amber mica,' being of amber color and clear. It is essential that the mica should be smooth, free from wrinkles and crevices, it must split readily and must be flexible, so much so that a piece of mica .010 inch thick would bend to a curvature of about 3 in. diameter without cracking. Mica that has dark spots or spots similar to rainbow colors, or what is known as smoky mica, is not at all suitable for electrical purposes. Mica must also stand a flame of intense heat without crumbling up or showing any disintegration. We give you below the principal sizes of mica used by us, and would say that at the present time we have orders out for some of sizes ranging from 200 to 600 pounds. Commutator mica: 1½ x 4 in., 1¼ x 6⅝ in., 1⅝ x 4¼ in., 1⅜ x 6½ in., 1⅜ x 8 in., 1¾ x 8 in., 2 x 5 in., 2½ x 5 in., 2 x 7 in., 2 x 12 in., 2½ x 12 in., 4 x 4 in., 5 x 8 in. Binding mica: 1¼ in. wide.

Micanite.—One of the most recent uses to which mica is commercially applied, is the manufacture of micanite, by which large quantities of scrap or inferior qualities are utilized, and by means of a patented process small pieces of waste mica are built up into sheets 40 inches square, and larger if necessary. The product can also be made in any desired form, and is largely supplied to the elecrical trade for insulating purposes.

Stove Panels.—No artificial transparent substance has, however, been devised to replace the mineral where high degrees or sudden changes of temperature take place. It has, therefore, considerable use in stoves, where it is desirable to obtain the cheerful glow of the fire without the direct heat. Its transparency is little affected by the repeated and alternate heating and cooling, and it is not readily attacked by the gases and vapors, although it does not so effectually resist the gases from a bituminous coal, and is, moreover, so quickly blackened by the soot that it soon loses its transparency.

Its use, therefore, is confined to anthracite, or to gas asbestos stoves. For this purpose it has to be clear, free from spots, and of a uniform color through the sheet.

Lamp Chimneys.—Chimneys for oil and gas lamps with round burners are sometimes made of mica, especially those outside shop windows, where glass would not stand rain-drop splashes and sudden changes of temperature, while a breakage would involve considerable risk from fire.

Fire Screens.—In consequence of its transparency for light and its capacity for radial heat, we find mica employed as fire screens, in the peep holes of furnaces, and as screens in the laboratory and workshops for observing the processes in a highly heated furnace without suffering from the intense heat.

Glasses and Spectacles.—The best employment of the immense quantities and fragments of waste mica which suggests itself as worthy of a wider field than it now possesses, is the substitution of mica for glass in spectacles worn by workmen, especially stone and metal workers, to protect their eyes from chips and splinters. As already made in Germany these mica glasses are concaved in the shape of watch glasses, and are about one-twenty-fifth of an inch in thickness. The advantages gained by this utilization are greater than would at first sight be imagined. Mica spectacles cannot be broken. Pounding with a sledge hammer merely flattens them ; nor does molten metal poured on the mica affect it. The shower of pointed iron particles which issue from lathes merely rebound from the elastic mica glasses.

Paints, Wall Papers and Ornamental Uses.—Another use for mica is its application, where previously colored or metalized, to ornamental purposes. From its unalterable nature the material preserves gilding, silvering or coloring from deterioration; and from its diaphanity, the articles so treated will preserve all their brilliancy. Finely ground mica or colored gelatine, also shows handsome effects, and when mixed with a solution of gumarabic, it makes a good silver ink. The gelatine combination is used for inlaying buttons, and this beautiful application of mica is the production of bronze-like colors which bear the names brocades, crystal colors and mica bronzes. Among the advantages of these are that they are indifferent to sulphurous exhalations, are very light in weight, and in some colors are even more brilliant than the metal bronzes. When small particles of mica silver are spread over articles coated with asphalt varnish, the result is a good imitation of granite. The crystal colors are also suitable for calico printing, and the fabrics to which they are applied surpass in brilliancy the heavy bronze and glass dust fancy fabrics of Lyons. Such colors have been used to decorate porcelain and glassware, the articles undergoing a second heating up to the fusing points of their glazing. By suitable dyes the material is colored to a variety of hues.

In India mica is used extensively for decorative purposes, either in its natural state or artifically colored. In the days of ancient Rome the powdered material was scattered over the surfaces of the amphitheatre to obtain a brilliant glistening effect. In India it is used at native festivals, marriages, and in the Mahommedan maharam for processional ornaments, as lamps, and for ornamental pottery, on curtains and cloths, in calico printing, and by the *dhobi* (washerman) to give a sparkle to cloth, to

which the fine particles easily adhere. Colored micas have also been suggested as a substitute for colored glass, but its use in this direction must be limited, and as the colored micas contain larger proportions of iron, they are more susceptible to destruction when exposed to weather. There seems no reason, however, why the quantities of amber colored biotites, as well as muscovites, with inclusion of magnetic oxide in regular patterns, should not be so exposed in unexposed places. Natives in the Trichinopoly district of the Madras Presidency, and elsewhere, sell a large number of pictures and portraits painted on mica sheets of various sizes. Mr. Edgar Thurstan, reporter on economic products to the Government of India, states that the mica used in that district for painting pictures on, etc., is purchased by the painters from the Marakoyers (class of Musselmen) of Negapatam, who purchase large quantities of mica every year from ships arriving there from Calcutta and other sea-coast towns, for making the big taboots for the Kauthiri festival, and retail some to the painters.

As a Lubricant—The mineral is somewhat extensively used in the manufacture of mica grease. As a lubricant for railroad purposes its value lies in the fact that it is absolutely anti-friction, and it is claimed with its use hot boxes or journals are impossible.

The following are the principal producers of this mineral in Canada:—

Name.	Location of Mine.	Address.
Anderson, A. T. & Co.	Tp. of Levant, Frontenac Co., Ont.	62 Adelaide St. E., Toronto, Ont.
Anglo-Can. Phosphate Co.	Tp. of Burgess, Ont.	R. C. Adams, 41 St. Francois Xavier St., Montreal.
Blackburn Estate	Templeton, Que	H. C. Baker, Supt., Perkins Village P. O., Que.
Canonto Mica and Mineral Co.	Tp. So. Canonto, Frontenac Co., Ont.	F. P. Braizie, Toronto.
Dominion Mica Co.	Ottawa Co.	504 Besserer St., Ottawa.
McLaurin & McLaren.	Templeton.	Lewis K. McLaurin, East Templeton, Que.
Mica Manufact'ng Co., Ltd.	Ottawa Co., Que., and Burgess, Ont	T. J. Watters, Mgr., Ottawa.
Rookey & Mercellais	Templeton.	Perkins Village P. O., Que.
Smith, J. F.	Téte Juan Caché Dist., B.C.	Kamloops, B. C.
Sydenham Mica and Mining Co	Tp. of Loughboro, Ont	J. P. Lacey, Sydenham, Ont.
Wallingford Mica Co.	Templeton	E. Wallingford, Perkins Village P. O., Que.
Vavasour Mining Ass'n	Tp. of Hull, Que.	T. F. Nellis, Metcalfe St., Ottawa.

Other Uses—Mica has been used on board men-of-war in localities where glass would be broken by the concussion due to the firing of heavy guns. It is made into reflectors, sea compasses, inlaying for wood instead of enamel. It is also used for

roofing purposes, and in several patented processes forms a water and fireproof covering for strata of rubber, tar, candles, felt and similiar materials. Its most recent application in a powdered state is to the so-called wax printed cloths. These are made by applying melted wax to the cloth with a stick in free-hand designs, and before the wax is dry powdered mica is sifted over it. Under certain circumstances mica would be a convenient substitute for glass plates or celluloid films in photography, if perfectly polished and even plates could be obtained.

CHROMIC IRON.

This valuable mineral is found at many points throughout the sepentine belt of the Eastern Townships of the Province of Quebec, from the boundary of the State of Vermout to the Shickshock mountains in Gaspé. It was first described in the report of the Geological Survey of Canada, 1847-8, as occurring in the Township of Bolton, on Lot 26, VII Range, in a vein said to be 1 ft. thick, a sample of which gave Dr. Sterry Hunt an assay 45.90 oxide of chromium. In 1863, Sir William Logan mentions a shipment to Glasgow of 11 tons of over 50 per cent. chromic oxide, which realized $52.00 per ton.

In 1894 considerable interest was excited by the discovery of valuable deposits in the Township of Coleraine, and at other points on the line of the Quebec Central Railway, the shipments for the twelve months amounting to 915 tons. The shipments up to the end of the year 1896 have been :—

	Tons.
Shipped prior to 1894	50
" in 1894	915
" 1895	2,837
" 1896	2,037½
Total shipments	5,839½
Ore on hand at 1st January, 1897, about	1,100
Total production	6,939½

The prices realized were : $18.00 for 50% and $8 to $12 for 40 to 44% f.o.b. cars Quebec Central Railway.

The chief use of chromic iron is in the chemical industry for the manufacture of of potassium and sodium bichromates, for the preparation of basic furnace hearths, and for the manufacture of ferro-chromium, which is used in the making of chrome steel. Much the greater part of the mineral produced is employed in the chemical industry, and for this purpose the best ores are required. In the manufacture of ferro-chromium the low grades of ore can be advantageously used.

Of late there has grown up among metallurgists some demand for chrome ores having special qualities as to constituents. To those who have not results obtained in their own laboratories, Dr. Glenn, Baltimore, offers the following analyses as being typical of what may be expected in consignments of ore :—

TYPICAL ANALYSES OF CHROMIC IRON ORE IN BULK.

——	No. 1.	No. 2.	No. 3.
	%	%	%
Silica	7.00	5.22	6.44
Chromic oxide	39.15	51.03	53.07
Ferrous oxide	27.12	13.06	15.27
Magnesium oxide	16.11	16.32	16.08
Calcium oxide	3.41	2.61	1.20
Aluminum Oxide	7.00	12.16	8.01
Total	99.79	100.40	100.07

The principal producers of this mineral in 1896 were :—

Name.	Location of Mine.	Address.
Anglo-Canadian Asbestos Co.	Tp. of Coleraine, Que	B. of T. Bdg., Montreal.
Blondeau & Roberge	" "	Black Lake, Que.
Carrier, Louis	" "	" "
Coleraine Mining Co	" "	" "
Dumais, E.	" "	" "
Frechette, L., and others	" "	" "
Hall, P. P.	" "	Quebec City.
Leonard & Morin	Garthby	Garthby, Que.
Nadeaux & Co	Tp. of Coleraine	Black Lake, Que.

MISCELLANEOUS MINING COMPANIES.

Aaron's Rod Mining and Development Co., Ltd. — Capital, $1,000,000. Shares $1.00 each. Trustees: F. Williamson, Geo. Doyle, P. E. Wilson. Head Office: Nelson, B.C.

Adams Mining Co., Ltd.—Capital, $1,000,000. Shares $1.00 each. Trustees: J. D. Farrell, E. J. Bowman, P. J. Hickey. Head Office: Sandon, B.C.

Adamant Manufacturing Co. of America. — Authorized Capital, $500,000. E. W. Parmalee, President; G. G. Ruston, Sec.-Treas.; C. G. Root, Vice-Pres. Head Office: 309 East Genesee Street, Syracuse, N.Y. This company owns and works for gypsum, an area comprising 65 acres at North Cayuga, in the County of Haldimand, Province of Ontario. Small force employed. The works at Syracuse, N.Y., are supplied with gypsum, chiefly obtained from Nova Scotia and New Brunswick.

Alabastine Co., Ltd.—Incorporated 1885. Authorized Capital, $50,000, in shares of $100 each, of which to date $34,000 have been subscribed and paid up. Directors: M. B. Church, Grand Rapids, Mich.; J. M. Wheeler, Paris, Ont.; David S. Hopkins, Grand Rapids, Mich.; Abram B. Knowlson, Grand Rapids, Mich.; John Kay, Paris, Ont.; R. E. Haire, Paris, Ont. Head Office: J. M. Wheeler, Secretary, Paris, Ont. This company operates extensive white rock gypsum mines in the county of Haldimand, and owns and works in Paris, Brant County, the only grey plaster mines in Ontario. It has recently added to the works at Paris a calcining plant for making plaster of Paris. Seventeen persons employed. Estimated value of machinery plant and buildings owned by the company, $15,750.

Albert Manufacturing Co., Ltd.—Incorporated 1854. Authorized Capital, $350,000. Directors: James G. Lindsay, President; J. T. Tomkins, Walter Tomkins, Calvin Tomkins, C. J. Osman. Head Office: C. J. Osman, Superintendent, Hillsborough, N.B. Operates four gypsum quarries and a plaster mill at Hillsborough in Albert County, Province of New Brunswick. In 1896, the shipments of rock plaster amounted to 59,265 tons, while 8,745 tons were manufactured in 61,220 barrels of calcined plaster, land plaster and Terra Alba. 165 persons employed.

Alberta and Kootenay Development Co., Ltd.—Capital, $500,000. Shares $1.00 each. Trustees: R. G. Bell, W. C. Wells, G. S. McCarter, N. J. Lindsay, G. Ericksen. Head Office: Golden, B.C.

Algonquin Consolidated Mining & Development Co.—Incorporated 1897. Capital, $1,000,000, divided into 1,000,000 shares of a value of $1.00 each. Head Office: Rossland. Directors: T. M. Daly, A. C. Galt, J. M. Clark, F. A. Brown. Formed to purchase the "Algonquin," "Calumet," "Goegebic," "Buckhorn," "Red Jacket," "Hermit," "Hottentot," "Golden West," "Bryan," "Lalla Rookh," including Fraction "Keewaydin," "Tartar," "Oberon," "Monarch," "Mirror," "Iriquois," "Arctic," "Allan Bane," "Roderick Dhu," mineral claims, all situate at or near Christina Lake, in the Trail Creek District, British Columbia.

Alliance Prospecting Syndicate of B. C.—Head Office: Vancouver. Directors: H. Bell-Irving, Duncan Bell-Irving, and Henry Clyne. Formed to acquire mineral lands and to carry on mining in B.C.

Amazon Gold Mining and Milling Co., Ltd.—Incorporated 1897. Capital, $1,000,000. Head Office: Rossland, B.C. Directors: R. O'Brien, J. W. Lee,

C. Frey. Formed to acquire the "Aurora," "Webfoot" and "Third Day" mineral claims, all situated in Trail Creek Mining Division of West Kootenay, in the Province of British Columbia.

Ambrose Mining and Development Co., Ltd.—Capital, $1,000,000. Shares $1.00 each. Directors: Samuel C. Wood, Peter M. Campbell, Charles Cameron, Frank E. A. Cott, Lewis Walsh. Head Office: Toronto, Ont.

Anaconda Consolidated Gold Mining Co., Ltd.—Incorporated 1897. Capital $3,000,000, divided into 3,000,000 shares of a value of $1.00 each. Head Office: Rossland, B.C. Directors: W. G. Campbell, A. L. Jaffe, J. R. Cranston, all of Rossland. Formed to purchase the "Anaconda," "Treadwell," City of Toronto," "City of Winnipeg," "City of Rossland" and "Comstock" mineral claims, situated on the east slope of Lake Mountain in the Trail Creek Mining Division of West Kootenay District, in the Province of British Columbia.

Apex Gold Mining and Development Co. (Foreign).—Capital, $1,500,000. Shares $1.00 each. Head Office: Spokane, Wash.

Argentine Gold Mining Co. (Foreign)—Incorporated 1897. Capital, $1,000,000, divided into 1,000,000 shares of $1.00 each. Head Office: Spokane, Wash. Formed for the purpose of mining in British Columbia.

Atlas Mining and Development Co., Ltd. — Incorporated 1897. Capital, $1,000,000, divided into 1,000,000 shares of a value of $1.00 each. Head Office: Rossland, B.C. Directors: A. T. Toney, J. W. Thornton, H. F. Arnold. Formed to acquire and operate the "Monte Cristo" mineral claim situated in the Nelson Mining Division of the West Kootenay district, British Columbia.

Bath Island Mining Co., Ltd. — Capital, $750,000. Shares $1.00 each. Directors: John Galt, M.E., John Gray, Robt. M. Gray, Ralph K. Burgess, Wm. H. Collison, Jno. Ferguson. Head Office: Toronto, Ont.

Belcher Consolidated Gold Mining Co., Ltd.—Incorporated 1897. Capital, $1,200,000, divided into 1,200,000 shares of $1.00 each. Head Office: Rossland. Directors: F. Guse, W. R. Ralston, E. Johnson, J. J. Davis, I. Anderson, J. S. Patterson. Formed for the purpose of mining in British Columbia.

Black Currant Mining Co., Ltd.—Incorporated 1897. Capital, $1,000,000 divided into 1,000,000 shares of a value of $1.00 each. Head Office: Kaslo, B.C. Directors: C. F. Caldwell, Van B. DeLashmutt and D. Clark of Kaslo, B.C. Formed for the purpose of mining in British Columbia.

Black Diamond Mining and Development Co., Ltd.—Incorporated 1897. Capital, $600,000, divided into 1,200,000 shares of 50 cents each. Head Office: Kaslo, B.C. Directors: Major S. B. Steele, A. R. Macdonnell of Fort Steele, and T. M. Gibson, Kaslo, B.C. Formed for the purpose of mining in British Columbia.

Bou Diable Mining Co., Ltd. — Capital, $75,000. Shares $1.00 each. Trustees: Alfred C. Carew, Chas. E. Costerton, Leopold S. Simons. Head Office: Vernon, B.C.

Britannia Mining Co., Ltd. — Capital, $250,000. Shares 25 cents each. Trustees: Alfred J. Andrews, Fletcher S. Andrews, Chas. H. Enderton, Paul Hatch, Harvey L. Fife. Head Office: Slocan City, B.C.

British American Exploration and Gold Mining Co.—Incorporated 1897. Capital, $10,000,000, divided into 10,000,000 shares of $1.00 each. Head Office: Victoria, B.C. Directors: J. Murphy, W. H. Berridge, G. J. Harvey and Jas. Murray. Formed for the purpose of mining in British Columbia.

British and Canadian Gold and Silver Mines Co., Ltd. — Incorporated 21st October, 1896. Authorized Capital, $15,000. Shares $100 each. Directors;

N. Clarke Wallace, J. G. Hallett, John C. Thom, S. W. McMichael, J. J. Cook, James Armstrong, and John A. Ferguson. Head Office: Toronto, Ont.

British Columbia Agency, Ltd. (Foreign)—Capital, £100,000. Shares £1 each. Head Office: 15, 16 George St., Mansion House, London, Eng.

British Columbia Development Association, Ltd.—Head Office: 53 New Broad Street, London, E.C. Registered 14 December, 1895. Authorized Capital, £10,000, in 198 preference shares of £50 each, and 100 founders' shares of £1 each. To develop the resources of British Columbia.

B. C. Development Co., Ltd., (Foreign.)—Capital, £30,000. Shares £1 each. Head Office: 70 Cornhill, London, England.

British Columbia Exploration Co., Ltd—Capital, $100,000. Shares $1.00 each. Trustees: John Thomas, James B. Owens, Ernest Miller. Head Office: Rossland, B.C.

B. C. Exploring Syndicate, Ltd.—Incorporated 1896. Capital, £20,000, divided into 20,000 shares of a value of £1 each. Head Office: 103 Cannon St., London, England.

B. C. Gold Fields Exploration, Development and Investment Co., Ltd.—Capital, $2,500,000. Shares $1.00 each. Directors: Hon. Geo. E. Foster, T. Stuart, S. F. McKinnon, Hon. George McKindsey, H.W. N. Murray, Q.C., and Samuel Bassett. Head Office: Toronto, Ont. Formed to acquire and take over the assets and business and good will of the British Canadian Gold Fields Exploration, Development and Investment Company, Ltd.

British Columbia Gold Fields Mining and Milling Co., Ltd.—Incorporated 1897. Capital, $20,000,000, divided into 20,000,000 shares of $1.00 each. Head Office: Victoria, B.C. Directors: R. Hall, G. L. Milne, J. McConnell, all of Victoria, B.C. Formed for the purpose of mining in British Columbia.

British Kootenay Exploration Syndicate, Ltd.—Registered 30th, Sept., 1895. Authorized Capital, £,10,000, in shares of £1 each. 8,000 shares have been issued and are full paid, 5,500 being credited as fully paid. Directors: J. R. Campbell, H. Weston Wallis, Edward Walker, E. H. Thruston. Head Office: William Hollick, 20 Bucklersbury, London, England.

British Columbia, London and Kootenay Mining and Development Co., Ltd.—Incorporated 1897. Capital, $2,000,000, divided into 2,000,000 shares of $1.00 each. Directors: J. L. Cawthorn, R. Scott, T. M. Rixen and H. Croft. Head Office: Rossland, B. C. Formed for the purpose of mining in British Columbia.

British Columbia Mining Co., Ltd.—Registered 1896. Authorized Capital, £20,000, in shares of £10. Head Office: Suffolk House, Cannon Street, London, Eng. F. Buckley, Secretary.

British Columbia Mining and Development Syndicate.—Authorized Capital, $2,000,000. Directors: L. W. Curtis, James K. Clarke, P. J. Shields, L. Beaupre, all of Rossland, B. C., and E. J. McClintock, E. B. Wiggins, of Saginaw, Mich., and Chas. E. Sheldon, of Red Wing, State of Minnesota. Head Office: Rossland, B. C.

British Columbia Mining and Milling Co. (Foreign).—Incorporated 1897 Capital, $750,000, divided into 750,000 shares of a value of $1.00 each. Head Office: Spokane, Wash. Formed for the purpose of mining in British Columbia.

British Columbia Southern Prospecting and Development Co., Ltd.—Capital, $50,000. Shares $1.00 each. Trustees: Thos. M. Daly, Jno. Sinclair, Alex. B. McLennan, J. A. Payzant. Head Office: Rossland, B. C.

British Columbia Syndicate, Ltd.—Registered 7th March, 1896. Authorized Capital, £2,000, in shares of £1. Directors: J. D. Pattullo, W. A. Klockman, Capt. A. C. Bald. Head Office: J. A. Wilkie, Secretary, 30 St. Swithin's Lane, London, E. C. To acquire mines, mining and water rights, etc.

British Columbia Tunnel and Development Co., Ltd.—Capital, $500,000. Shares $50 each. Trustees: Jas. F. McLaughlin, John J. Moynahan, Wm. A. Campbell. Head Office: Rossland, B.C.

British Empire Finance Corporation.—Registered 1896. Authorized Capital, £500,000 in shares of £1. Advisory Board in Canada: Hon. Sir Charles Tupper, Bart., Hon. J. W. Longley, Sir James A. Grant, Rufus H. Pope, M.P. Formed to acquire and work mineral properties in Canada and other portions of the Empire.

British Empire Mining Co., Ltd.—Capital, $200,000. Shares 10 cents each. Trustees: Paul C. Van Horne, A. W. Sullivan, S. K. Champion, George Hewson. Head Office: Vancouver, B.C.

British North-Western Development Co., Ltd.—Incorporated 1897. Capital, $10,000,000, in shares of $1 each. Incorporated 1897. Head Office: Victoria. Directors: G. L. Milne, A. C. Flumerfelt, and W. J. Dowler. Formed for the purpose of mining in British Columbia.

Brunswick Mining and Development Co., Ltd.—Capital, $1,000,000. Shares $1.00 each. Trustees: Chas. D. Rand, Richd. E. Leonard, Geo. L. Fowler. Head Office: Vancouver, B.C.

Buffalo Mining Co. of Slocan, Ltd.—Capital, $150,000. Shares 25 cents each. Trustees: John M. MacKinnon, Chas. C. Bennett, Robt. J. Leckie, Robt. E. Palmer, Jos. B. Seymour. Head Office: Vancouver, B.C. Formed to acquire by purchase or otherwise the "Buffalo" mineral claim, situate on Four Mile Creek, in the Slocan Mining Division of West Kootenay, Province of British Columbia.

Bunker Hill and Blackwood Mining Co.—Incorporated 1896. Authorized Capital, $500,000 Head Office: Vancouver, B.C. Directors: Ernest E. Evans, C. P. Dunbar, Osborne Plunkett, and M. M. Campbell. Formed to acquire and work the mineral claims "Bunker Hill No. 2" and "Blackwood," situate on the North Fork of Lemon Creek, in the Slocan Mining District, British Columbia.

Burrard Mining Association, Ltd.—Capital, $50,000. Trustees: Geo. R. Maxwell, A. Althorpe Smith, Arthur Haines, Christopher W. Ford, Thomas C. Alcock, Caleb B. Mansell, Thomas Evans. Head Office: Vancouver, B.C.

Camp McKinney Development Co., Ltd.—Capital, $600,000. Shares $1.00 each. Trustees: Frank S. Taggart, C. D. Rand, R. E. Leonard. Head Office: Vancouver, B. C. Formed to acquire the "Wiarton" mineral claim, situated in Camp McKinney, in the Osoyoos Division of the District of Yale, in the Province of British Columbia.

Canada Prospecting and Mining Co., Ltd.—Capital, $100,000. Shares $1.00 each. Trustees: Arthur G. Thynne, Osmund P. Skrine, Alfred G. Chaldecott. Head Office: Vancouver, B. C.

Canadian Exploration Syndicate, Ltd.—Registered 20th August, 1895. Authorized Capital, £2,000, in 40 shares of £50. Head Office: R. Hoare, 92 Bartholomew Close, London, E. C.

Canadian Yukon Prospecting and Mining Co., Ltd.—Capital, $20,000. Shares $1.00 each. Directors: Wm. A. Allan, C. Berkeley Powell, E. J. Chamberlin, Chas. H. Eliot, S. H. Fleming, Chas. J. Jones, E. F. Fanqier, Jno. T. Lewis. Head Office: Ottawa, Ont.

C. C. & J. Mining and Development Co., Ltd.— Capital, $1,000,000. Shares $1.00 each. Trustees: Wm. L. Challoner, D. E. Campbell, Thos. J. Jones, Head Office: Victoria, B.C.

Canyon Gold and Silver Mining Co., Ltd.—Incorporated 1897. Capital, $800,000, divided into 1,600,000 shares of 50c. each. Head Office: Vancouver, B.C. Directors: P. Judge, G. D. Travis, H. A. Brocklesby, all of Vancouver, B.C. Formed for the purpose of mining in British Columbia.

Cariboo Creek and Canadian Mining and Development Co. Ltd.—Capital, $2,000,000. Shares $1.00 each. Trustees: E. C. Finch, Thos. Abriel, Jos. B. Dabney. Head Office: Rossland, B.C.

Cariboo Mining and Development Co.—Head Office: Seattle, Wash. Capital, $300,000. To carry on mining in British Columbia.

Cariboo Reefs Development Co., Ltd.—Registered 1st June, 1895. Authorized Capital, £20,000, in 20,000 shares of £1 each, which were offered for subscription in April, 1895, payable 1s. per share on application, 2s. on allotment, 2s. on the 1st of August, 1895, and the balance in calls of 2s. 6d. each at three months' notice. 16,760 shares have been issued, 13,134 being issued credited as fully paid, and 3,626 having 5s. per share called up. Directors: Thos. Stirling Begbie, Jas. Wiseman, Col. H. Hamilton, A. C. Mitchell Innes. Head Office: William Boyle, 36 Walbrook, London, E. C. Formed to acquire three mining claims known as the "Eureka," the "Victoria" and the "Consolidated," all situated on the Princess Maria Lode and lying mostly on the Williams' Creek Mountain, three miles south of the Town of Barkerville, and distant about 280 miles north of Ashcroft. The purchase consideration was £13,324, payable £200 in cash and the balance in fully paid shares.

Central Exploration Co., Ltd.—Capital, $100,000. Shares $1.00 each. Trustees: R. G. Tatlow, A. G. Thynne, O. P. Skrine. Head Office: Vancouver, B. C. Formed to purchase or otherwise acquire the mineral claims and properties of "The Grand Central" Mining Company, Province of British Columbia.

Central Ontario Mining Co., Ltd.—Capital $49,000. Shares $10.00 each. Directors: W. H. Robinson, Henry, W. Maw, Geo. W. Edgar. Head Office: Toronto, Ont.

Chandos Mining Co., Ltd.—Incorporated 1895. Authorized Capital, $199,000 in shares of $100. Directors: J. A. Handway, New York; J. Robinson, Montreal; R. H. Green, James Pearson, Toronto. Head Office: Toronto, Ont. Formed to carry on mining in Ontario.

Chemical Manufacturing and Mining Co. of Ontario, Ltd. — Capital, $500,000. Shares $1 each. Directors: C. W. Volney, G. H. Weatherhead, John F. Wood, T. Baker and George Taylor. Head Office; Ottawa, Ont.

Christina-Cascade Mining and Development Co., Ltd.—Incorporated 1897. Capital, $1,000,000, divided into 1,000,000 shares of $1.00 each Head Office: Rossland, B.C. Directors: T. M. Daly, Jno. Lane, J. M. Clarke, J. M. Robinson. Formed for the purpose of mining in British Columbia.

Chrysolite Gold Mining and Development Co. (Foreign)—Capital, $1,000,000, divided into 1,000,000 shares of $1 each. Head Office: Waitsburg, Wash., U.S.A. Formed for the purpose of mining in British Columbia.

Cinnabar Mining Co. of British Columbia, Ltd.— Incorporated 10th July, 1895. Capital, $100,000. Directors: A. G. Ferguson. R. G. Tatlow, F. C. Innes. Head Office: C. C. Bennett, Secretary, Vancouver, B. C. The company owns five claims on the north shore of Kamloops Lake, Province of British Columbia, at a point about five miles north-east of Savonas, on the main line of the Canadian

Pacific Railway. Mining for cinnabar was begun in July, 1895, a force of 25 persons being employed.

Climax Gold Mining Co. (Foreign) — Capital, $1,000,000, divided into 1,000,000 shares of $1 each. Head Office: Spokane, Wash.

Cody-Slocan Mining and Milling Co., Ltd.— Capital, $250,000, divided into 1,000,000 shares of 25 cents each. Directors: G. A. Farini, Toronto; W. E. O'Connell, Sandon; J. K. Clark, Rossland; S. B. Hendee, Sandon; F. L. Christie, Sandon. Head Office: Sandon, B. C. Formed for the purpose of mining in British Columbia.

Coleraine Mining Co., Ltd.—Incorporated 20th November, 1891. Authorized Capital, $120,000, in 1,200 shares of $100 each. Directors: Hon. J. A. Chapleau, Hon. A. Desjardins, A. L. DeMartigny, Hon. A. Lacoste. Head Office: Hon. A. Desjardins, Managing Director, Montreal. Formed for the purpose of buying, selling, dealing in, and working mines and minerals, etc. The company owns a large block of asbestos, chromic iron, and other mineral lands in the Township of Coleraine, in the Province of Quebec, a portion of which are being worked by the company and others on royalty.

Columbia Mineral and Mine Association, Ltd.—Capital, $250,000. Shares $5.00 each. Trustees: Jno. B. Newcomb, Ben. E. Lyster, Jas. Helman, A. C. Brydone-Jack. Head Office: Vancouver, B. C.

Columbia Mining Co. of Canada, Ltd.—Incorporated 1896. Capital Stock, $80,000, in 16,000 shares of a value of $5.00 each. Directors: Geo. Broughall, Toronto; John McRae, Maggie McRae, Toronto; M. A. M. Henderson and W. J. Christie, Winnipeg. Head Office: Winnipeg, Man.

Columbia Mining Co. of Victoria, B. C.— Capital, $100,000. Directors: J. C. Davie, B. W. Pearse, A. P. Luxton, F. B. Pemberton, and A. Flumerfelt, all of Victoria, B. C. To carry on mining in British Columbia.

Confederation Mines Development Corporation (Foreign). — Capital, $2,500,000. Shares $1.00 each. Head Office: Toronto, Ont.

Consolidated Mines Co., Ltd. — Capital, $1,500,000. Shares $1.00 each. Trustees: Peter Leclair, Duncan McMillan, D. R. Maclean. Head Office, Sandon, B.C.

Consolidated Sable Creek Mining Co., Ltd.—Capital, $1,500,000, divided into 1,500,000 shares of $1.00 each. Directors: G. D. Scott, Fred Cope, Vancouver; R. E. McKechnie, of Nanaimo, B.C. Head Office: Vancouver, B.C.

Corinth Mines, Ltd. (Foreign) — Capital, £100,000, divided into 100,000 shares of £1 each Head Office is situated in England.

Cornwallis Mining and Development Co., Ltd. — Capital, $1,000,000. Shares $1.00 each. Trustees: Hector McPherson, John Box, Thomas F. Butcher. Head Office: Nelson, B. C. Formed to acquire the mineral claims "Republic No. 2," "American Eagle," "Bell No. 2," known as the "Republic Group," located about three and a half miles from Slocan City, between Twelve-Mile and Springer Creeks, in the Slocan Mining Division, in the District of West Kootenay, and Province of British Columbia.

Credit Forks Mining and Manufacturing Co., Ltd.— Incorporated 1896. Authorized Capital, $200,000 in shares of $100. Directors: R. Carroll, J. B. Vick, J. H. McKnight, F. J. Beharriell. Head Office: Toronto, Ont. Works: Credit Forks, Ont. Formed to purchase and acquire the business and assets of the firm of Carroll & Vick, quarrymen, limeburners and contractors; to purchase, manufacture, sell and deal generally in lime, cement, brick, terra cotta, etc.; to mine, quarry and generally deal in stone of all kinds, at the Credit Forks, in the Province of Ontario,

Cronsted Mining Company of Algoma, Ltd.—Capital, $450,000. Shares $10 each. Directors: William H. Davis, William Bowman, Jno. Kelderhouse, George W. Maytham, Oliver W. Day. Head Office: Niagara Falls, Ont.

Crow's Nest Mining and Development Co. of Ontario, Ltd. — Capital, $200,000. Shares $1.00 each. Directors: P. Jamieson, Alex. Buntin, Wm. Stone, Wm. Armstrong, N. Merritt, Wm. M. Platt, Wm. H. Biggar. Head Office: Toronto, Ont.

Crow's Nest Pass Mining Co., Ltd.— Capital, $75,000, divided into 750,000 shares of 10 cents each. Directors: W. R. Hall, P. J. Shields, W. J. Noble, L. Becher, of the Town of Rossland. Head Office: Fort Steele, B. C. Formed for the purpose of mining in British Columbia.

Daphne Mining and Development Co., Ltd.—Capital, $1,000,000. Shares $1.00 each. Trustees: G. E. Corbould, C. G. Major, Arthur Malins. Head Office: New Westminster, B. C.

Deer Park Mining Co.— Registered 1896. Capital, $1,000,000. Head Office: Spokane, Wash. Formed to carry on mining in British Columbia.

Del Ecudor Mines Co., Ltd.— Capital, $500,000. Shares $1.00 each. Trustees: Ward DeBeck, Alex. Grant, Jno. McQuillan. Head Office: Vancouver, B.C.

Dellia Mining and Milling Co.—Capital, $750,000. Head Office: Spokane, Wash. To carry on mining in British Columbia.

Delta Mining and Development Co., Ltd.—Incorporated 1895. Authorized Capital, $100,000. Directors: John Clark, A. C. McArthur, J. W. Jackson. Head Office: Vancouver, B. C. Formed to acquire and work mineral claims on Lulu Island, B.C., and recorded as "The Setting Sun," "The Diablo," and "The Valkyrie."

Derby Mining Co., Ltd.— Incorporated 1897. Capital, $1,000,000, divided into 1,000,000 shares of $1.00 each. Directors: J. Houston, R. E. Lemon, E. T. H. Simpkins. Head Office: Nelson, B. C. Formed for the purpose of mining in British Columbia.

Diamond Hill Mines, Ltd.—Incorporated 1897. Capital, $1,000,000, divided into 1,000,000 shares of $1.00 each. Directors: T. Mathews, J. Z. Hall, John Mathews, all of Vancouver, B. C. Head Office: Vancouver, B. C. Formed for the purpose of mining in British Columbia.

Diamond Jubilee Exploration Mining and Development Co. of Toronto, Ltd.—Capital, $1,000,000. Shares $1.00 each. Directors: Jos. E. Seagram, E. S. Cox, H. S. Mara, John Foy, S. F. Houston, S. D. Lauder, Jno. Laxton. Head Office: Toronto, Ont. The objects for which incorporation is sought are to carry on, in all its branches, the business of a mining, milling, reduction and development company, and for the said purpose only.

Diamond Jubilee Mining and Development Co. of British Columbia, Ltd.— Capital, $2,000,000. Shares $1.00 each. Trustees: C. H. MacIntosh, Edward Bowes, F. A. Mackenzie, Thomas M. Daly, W. L. Orde, J. N. Kerchhoffer. Head Office: Rossland, B. C.

Dominion Developing and Mining Co., Ltd.—Incorporated 1895. Authorized Capital, $500,000. Directors: G. L. Milne, Victoria, B. C.; John McQuinlan, John J. Banfield, Jonathan Miller and J. P. Carroll, all of Vancouver, B. C. Head Office: Vancouver, B. C. Formed to carry on mining in British Columbia.

Dominion Gold and Silver Mines Development Co. (Foreign).— Incorporated 1897. Capital, $2,000,000, divided into 2,000,000 shares of a value of $1.00 each. Head Office: Toronto. Formed for the purpose of mining in British Columbia,

Donald Prospecting and Development Co., Ltd.—Capital, $500,000. Shares $1.00 each. Trustees: Wm. Ainsworth, John J. Nealon, John H. Maclean. Head Office: Donald, B.C.

Double Eagle Mining and Development Co., Ltd.—Incorporated 1897. Capital, $1,000,000. Head Office: Kaslo, B.C. Directors: N. F. Mackay, D. J. Young, Kaslo; C. E. Smith, Calgary, N.W.T. Formed for the purpose of mining in British Colmmbia.

Douglas Mining Investment and Brokerage Co., Ltd.—Capital, $500,000. Shares $1.00 each. Trustees: C. S. Douglas, A. M. Douglas, Jno. J. Cowderoy. Head Office: Vancouver, B. C.

Dunlop Mining and Investment Co., Ltd.—Capital, $1,000,000, divided into 1,000,000 shares of $1.00 each. Head Office: Rosslaud, B.C. Directors: H. R. Dunlop, E. E. Dunlop, L. H. Schmidt, Rossland, B.C. Formed for the purpose of mining in British Columbia.

East Kootenay and Elk River Development and Exploration Co., Ltd.—Capital, $75,000. Shares 25c. each. Trustees: John Linchany, Geo. K. Leeson, John S. G. Abbott, Wm. R. Hall. Head Office: Fort Steele, B.C.

East Kootenay Exploration Syndicate.—Registered 9th Jan. 1892. Authorized Capital, £67,500, in shares of £1 each. All the shares have been issued and are fully paid, including 65,000 issued credited as paid. The capital was originally £80,000, but was reduced to its present amount in November, 1892, by cancelling 12,500 shares. There are 6 per cent. debentures to the amount £15,000. Directors: D. C. Griffith, Major-Gen. E. H. Steward, C.M.G., W. S. Ferguson. Head Office: J. F. Warner, 358 Mansion Chambers, London, E.C.

East Kootenay Mining and Development Co., Ltd.—Capital, $1,000,000. Shares $1.00 each. Trustees: Geo. S. McCarter, Thos. W. Jackson, Samuel Barber. Head Office: Golden, B. C.

Echo Mining and Milling Co., Ltd.—Capital, $250,000. Shares $1.00 each. Trustees: Jno. G. McGuigan, Jno. Martin, D. W. Moore, John J. Lynch, Edward N. Murphy. Head Office: Kaslo, B.C.

Economic Gold and Nickel Pyritic Smelting Co. of Sudbury, Ltd.—Capital, $300,000. Shares $1.00 each. Directors: Jas. B. Klock, Thos. Kirkwood, Rinaldo McConnell, John D. Macdonald, Richard W. Demorest. Head Office: Sudbury, Ont.

Elarton Salt Works Co., Ltd.—Incorporated 2nd of July, 1895. Authorized Capital, $10,000, divided into 100 shares of a value of $100 each. President: C. V. Morris. Head Office: T. G Morris, *Sec.-Treas.*, Warwick West, Ont. This company owns and operates a property $7\frac{9}{10}$ acres in extent, and known as the north east corner of the east half of Lot 6, in the 3rd Concession, Township of Warwick, Lambton County, Ontario. Depth of wells, 1,200 feet. Annual output about 1,000 tons. A small force of men employed.

Elkhorn Silver Mining Co., Ltd.—Incorporated 1896. Capital, $1,000,000, divided into 1,000,000 shares of a value of $1.00 each. Head Office: Spokane, Wash.

Erie Consolidated Mining Co., Ltd.—Capital, $1,000,000. Shares $1.00 each. Head Office: Rossland, B.C. Directors: J. F. McCrae, C. J. Campbell, T. Anderson. Formed for the purpose of mining in British Columbia.

Erie Mining and Milling Co., Ltd.—Capital, $200,000. Shares 25c. each. Trustees: Henry P. Jackson, Marshall Jackson, Colin McArthur, John McNiven. Head Office: Sandon, B.C. Formed to purchase the "Erie" and "Minneapolis"

mineral claims, situate in the Slocan Mining Division of West Kootenay, in the Province of British Columbia.

Exploration and Development Co., of Ontario, Ltd.—Capital, $2,000,000. Shares $1.00 each. Directors: Hon. F. Clemow, Hugh Blain, Hon. A. W. Ogilvie, A. Ansley, Geo. L. Milne, Oliver A. Howland. Head Office:

Falls View Gold and Silver Mining Co., Ltd.—Capital, $300,000. Shares of 25 cents. Head Office: Kaslo, B.C. Directors: E. C. Pease, S. C. Wing, E. E. Chipman, E. E. and H. B. McIntyre, of Kaslo, B.C. Formed to purchase the "Fall View," "Morning Glory" and "Midnight" mineral claims, situated on Bear Creek, one and one-half miles north of the Kaslo and Slocan Railway, in the Ainsworth Mining Division, Province of British Columbia.

Fennell Mining and Development Co., Ltd.—Capital, $1,000,000. Shares $1.00 each. Trustees: A. J. Hill, E. L. Webber, H. J. Stubbs, W. V. Davies, J. L. Card. Head Office: New Westminister, B.C. Formed to acquire the "Para" mineral claim situate on Ten-Mile Creek, Slocan Mining Division of West Kootenay, and adjoining, and other claims, and to sell or otherwise dispose of such claims.

Florence Mining and Development Co. of Slocan, Ltd.—Capital, $250,000. Shares 25 cents each. Trustees: Samuel B. Steele, Fred Steele, Wm. J. Tretheway, Alex. R. Macdonnell, John Herron. Head Office: Kaslo, B.C. Formed to purchase the Florence mineral claim, situate at the head of Liddle Creek, about twenty miles from the City of Kaslo, and about four and one-half miles from the Kaslo and Slocan Railway, in the Ainsworth Mining Division of West Kootenay District, B.C.

Foley Mines Exploration Co. of Ontario, Ltd.—Capital, $1,000,000. Shares $5.00 each. Directors: Rudolph A. Denime, Samuel S. Babcock, E. H. Hersher, Hans Rutishauser, Arthur St. G. Ellis. Head Office: Windsor, Ont.

Fort Steele Mining Co., (Foreign) — Capital, $600,000, divided into 600,000 shares of a value of $1.00 each. Head Office: Spokane, Wash.

Fraser River Gold Mines, Ltd. — Registered 8th July, 1895. Authorized Capital, £10,000 in 40,000 shares of 5s. each. Head Office: Walter Pears, 9 Grace church Street, London, E.C. Property on Lyall Bar and Sawmill Flat, situated at Lytton, Cariboo District, B.C.

Frederick Arm Mining Co., Ltd.—Capital, $500,000. Shares $1.00 each. Head Office: Vancouver, B.C. Directors: W. D. Brydone-Jack, Major A. Whitaker, R. D. Fetherston, G. R. Simpson, F. Cope, G. W. Hutchings, C. S. Douglas, all of Vancouver. Formed to purchase the "Blue Bells," "Gold Bug" and "Dashwood" mineral claims situated on Frederick Arm Coast District, B.C.

Gladstone Mining Co. (Foreign)—Capital, $1,000,000, divided into 1,000,000 shares of $1.00 each. Head Office: Spokane, Wash. Formed to mine in British Columbia.

Globe Mining Co., Ltd.—Capital, $1,000,000. Shares $1.00 each. Head Office: Kaslo, B.C. Directors: J. F. McNaught, C. F. Caldwell and E. DesLashmutt. Formed for the purpose of carrying on mining operations in British Columbia.

Gold Bar Mining Co., Ltd.—Capital, $100,000, divided into 1,000,000 shares of 10 cents each. Head Office: Victoria, B.C. Directors: J. E. Martin, A. E. Bellry and Jas. Murphy. Formed for the purpose of mining in British Columbia.

Golden and Forte Steele Development Co., Ltd.—Capital, $750,000. Shares $1.00 each. Head Office: Golden, B.C. Directors: A. Allen, A. McQueen, G. S. McCarter, S. Barber and T. McNaught. Formed for the purpose of mining in British Columbia.

Golden Crown Mining and Smelting Co. (Foreign) — Capital, $600,000, divided into 600,000 shares of $1.00 each. Head Office: Spokane, Wash. Formed for the purpose of mining in British Columbia.

Golden Eagle Consolidated Mining Co. (Foreign) — Capital, $1,000,000. Shares $1 each. Formed to acquire the "Golden Eagle" and "Pack Saddle" mines or claims situated about six miles above Grand Forks, B.C., and the "Bluebird" mine or claim situated two miles west of Grand Forks, B.C. Head Office: Spokane, Wash.

Good Hope Mining and Milling Co., Ltd. — Incorporated 1895. Authorized Capital, $500,000 in shares of $100. Directors: F. Gusé, President; E. L. Hooper, G. Mackie, P. Steep, W. Townsend, J. Maxwell. Head Office: Spokane, Wash. Formed to carry on mining in the Province of British Columbia.

Good Hope Mining and Milling Co., Ltd.—Incorporated 1897. Capital, $1,000,000, divided into 1,000,000 shares of $1 each. Head Office: Rossland, B.C, Directors: E. Baillie, J. H. Robinson and T. Anderson, all of Rossland, B.C. Formed for the purpose of mining in British Columbia.

Grand River Plaster Co.—Authorized Capital, $50,000, divided into shares of a value of $100 each, the whole of which have been subscribed and fully paid. Directors: Dr. Coles, Geo. S. Coutant, M. Albert Scull, Ernest R. Ackerman, Wm. Hamilton Merritt, Marion S. Ackerman, Secretary, 67 William Street, New York. Head Office: Cayuga, Haldimand Co., Ont. This company controls the gypsum underlying 300 acres of land known as the Huff Tract, and 116 acres known as the Jones Tract, at North Cayuga, in the County of Haldimand, Ont., upon which are situated the Merritt and Glenny gypsum quarries. The former has been worked for a period of forty-five years, and the latter some twelve years. Average yearly output, 500 tons. The company also manufactures calcined plaster, white and grey land plasters, etc. Twelve men employed.

Grand Union Mining and Development Co., Ltd. — Capital, $1,000,000. Shares $1.00 each. Head Office: Rossland, B. C. Directors: A. W. Smith, M. H. Dobie, A. McNish, Rossland. Formed to purchase the "Grand Union," and "Queen" mineral claims, situated in the Trail Creek Division of the District of West Kootenay, British Columbia.

Great Commonwealth Development and Mining Co., Ltd.—Capital, $5,000,000. Shares, $5.00 each. Head Office: Nelson, B. C. Directors: A. B. Buckworth, J. T. McKenzie, M. H. Dobie, J. N. Blake, H. M. Vincent. Formed for the purpose of mining in British Columbia.

Green Crown Mining and Milling Co.—Capital, $1,000,000. Head Office: Spokane. To mine in B. C.

Harrison Black Diamond Mining Co., Ltd.—Capital, $50,000. Head Office: Vancouver, B. C. Directors: B. E. Lyster, J. B. Newcomb, A. C. Brydone-Jack all of Vancouver. Formed for the purpose of mining in British Columbia.

Highland Group Mining and Development Co., Ltd.—Capital, $1,000,000. Shares $1.00 each. Trustees: G. T. Lundy, Hugh McMillan, Isaac S. Freeze. Head Office: Cody, B. C.

Hillside Silver Mining Co., Ltd.—Capital, $1,000,000. Shares $1.00 each. Trustees: P. G. Nash, Jos. F. Ritchie, Chas. Behrman. Head Office: Rossland, B. C.

Hinckley and Black Colt Mining Co., Ltd.—Incorporated 1896. Capital, $1,000,000. Head Office: Kaslo, B. C. Directors: J. B. McArthur, P. Porter, R. Shea, W. H. Mellick, Horace Thorne. To acquire the Hinckley and Black Colt mineral claims, situated in the Slocan district and New Denver mining division, in the district of West Kootenay, British Columbia.

Hope Mining and Milling Co., Ltd.—Capital, $500,000. Shares $1.00 each. Head Office: Vancouver, B. C. Directors: J. Miller, R. Mills, Vancouver; R. Jardine, New Westminster, B. C. Formed for the purpose of mining in British Columbia.

Ibex Mining and Development Co. of Slocan Ltd.—Capital, $300,000. Shares 25 cents each. Trustees: Sam. B. Steele, R. W. Bryan, D. W. King, W. J. Tretheway, A. M. Jarvis, Chris. Hilliard, Fred. Steele. Head Office: Kaslo, B. C. Formed to purchase the "Ibex," "Triangle," "Liddesdale," and "Gilt Edge" mineral claims, situated at the head of Liddel Creek, about twenty miles from the City of Kaslo, and about four and one-half mlles from the Kaslo and Slocan Railway, in the Ainsworth Mining Division, in the said District of Kootenay, B. C.

Imperial Gold Mining and Development Corporation of Ontario, Ltd.—Capital, $2,500,000. Shares $1.00 each. Head Office: Toronto, Ont. Directors: Robert S. King, Jos. Montgomery, Wm. H. Jones, Edward Trousedelle, Fred. D. Vigue, Jno. S. Dignam, Albert E. Jones.

Imperial Mining and Development Co. of Ontario, Ltd.—Capital, $500,000. Shares $1.00 each. Head Office: Rat Portage, Ont. Directors: Thos. W. Taylor, Duncan G. McBean, Henry Byrnes, Lendrum McMeans, Geo. A. Glines.

Independent Mining Co.—Incorporated 1896. Capital, $1,000,000. Head Office: New Westminster, B. C. Directors: J. B. Kennedy, Louis Williams, and H. L. DeBeck, all of New Westminster, B. C.

Industrial Mining Development and Investment Co. of Toronto.—Incorporated 1896. Authorized capital, $250,000. Shares $1.00. Directors: J. K. Kerr, Q. C., Toronto; Hume Blake, Toronto; B. J. Townsend, Toronto; W. A. Charlton, M.P.P., Toronto; John E. Askwith, Ottawa; C. H. Waterous, Brantford, Ont.; Chas. Boon, contractor, Toronto. Head Office: A. J. Truss, Sec., 90 Yonge St., Toronto. B. J. Townsend, Managing Director, owns and operates the "Robert E. Burns" mine, McMurdo, district of East Kootenay, British Columbia, equipped with 5 stamp-mill and other plant.

Ingersoll Mining Co.—Capital, $1,000,000, divided into 1,000,000 shares of $1.00 each. Head Office: Spokane, Wash. Formed to acquire and work the "Ingersoll" mine, situated in the Summit Mining Camp, Yale District, Kettle River Mining Division, British Columbia.

International Mica and Mineral Co. of Ontario, Ltd.—Capital, $100,000. Shares $1.00 each. Head Office: Toronto, Ont. Directors: Horace Thorne, F. P. Brazil, B. J. Thorne.

Inter-Ocean Mining and Prospecting Co. of Toronto, Ont., Ltd.—Capital, $1,000,000. Shares $1.00 each. Head Office: Toronto, Ont. Directors: Thomas Dunnett, John E. Elliott, William Dineen, Lua. K. Cameron, John M. Cotton.

Investors Mining and Development Co. of Ontario, Ltd.—Capital, $1,000,000. Shares $1.00 each. Head Office: Toronto, Ont. Directors: J. W. St. John, R. McGregor, M. A. Donnelly, Jr., A. Robinson, Geo. Burness, Alex. McLaughlin, Geo. S. Wallis, Thos. Ainley, Jno. A. Ferguson.

Iowa Mining and Milling Co.—Capital $650,000, divided into 650,000 shares of a value of $1.00 each. Head Office: Seattle, Wash. Formed for the purpose of mining in British Columbia.

Jackfish Bay Syndicate Ltd.—Capital, $99,000. Shares $1,000 each. Directors: Jas. K. McCutcheon, Wm. Maguire, Jacob M. Staebler, Chas. R. S. Dinnich, Louis J. Breithaupt, Mark J. Paterson, Chas. B. Jackes, David Lackie, Robt. Carroll. Head Office: Toronto, Ont.

Jackson Mines, Ltd.—Capital, $1,000,000. Shares $1.00 each. Trustees: obert Jackson, Daniel J. Munn, Geo. Alexander. Head Office: Kaslo, B.C. Formed to purchase the "Northern Belle," "Kootenay Star," "Dublin Queen," "Ophir" and "Moore Fraction" mineral claims, situate on Jackson Creek, at the head of Jackson Basin, about twenty miles from the City of Kaslo, and about four miles from Whitewater Station, on the Kaslo and Slocan Railway, in the Ainsworth Mining Division, Kootenay, B.C.

John E. Redmond Mining Co., Ltd.—Capital, $1,000,000. Shares $1.00 each. Directors: John E. Redmond, J. E. Gibson, M. Kuntz and R. Gibson, all of the town of Grand Forks, B.C. Head Office: Grand Forks, B.C. Formed to acquire the "Columbia," the "Iron King," and the "Kupper Queen" mineral claims situated on the North Fork of Kettle River Mining Division, Yale District, British Columbia.

Jubilee Gold Mines, Ltd.—Capital, $1,000,000, divided into 1,000,000 shares of $1.00 each. Head Office: New Westminster, B.C. Directors: J. J. Cambridge, R. McBride, T. J. Armstrong, J. R. Grant, all of New Westminster, B.C. Formed for the purpose of mining in British Columbia.

Kamloops Mining and Development Co., Ltd.—Incorporated 1895. Authorized Capital, $30,000, in shares of $1.00. Head Office: Kamloops, B. C. Directors: Harold E. Forster, C. C. Woodhouse, F. M. Wells, H. Symons. Formed to carry on mining in the Province of British Columbia.

Kasier Gold and Silver Mining Co., Ltd.—Incorporated 1897. Capital, $1,000,000, divided into 1,000,000 shares of $1.00 each. Head Office: Rossland, B.C. Directors: E. Johnson, M. Schweig, W. H. Lambert, F. H. Young, R. H. Dickson. Formed for the purpose of mining in British Columbia.

Kaslo Montezuma Mining and Milling Co.—Capital $1,250,000, divided into 1,250,000 shares of $1.00 each. Head Office: Seattle, Wash. Formed for the purpose of mining in British Columbia.

Kekionga Mining and Development Co.—Capital $1,000,000, divided into 1,000,000 shares of $1.00 each. Head Office: Trail, B. C. Directors: C. D. Wilt, G. W. Richardson, F. M. McLeod, Rossland, B. C. Formed for the purpose of mining in British Columbia.

Kenneth Mining and Development Co., Ltd.—Capital, $1,000,000. Shares $1.00 each. Trustees: T. A. Stephen, Clive Pringle, Lome Becher, T. M. Daly. Head Office: Rossland, B. C.

Kettle River Mining and Development Co., Ltd.—Capital $1,200,000, divided into 1,200,000 shares of a value of $1.00 each. Head Office: Rossland, B. C. Directors: J. McT. Repass, J. W. Fear, S. T. Langley. Formed for the purpose of mining in British Columbia.

Keystone Gold Mining Co., Ltd.—Capital, $1,500,0000, divided into 1,500,000 shares of $1.00 each. Head Office: Rossland, B.C. Directors: J. L. Parker, J. B. Dabney, S. Y. Wooten. Formed for the purpose of mining in British Columbia.

Kimberly Mining and Milling Co., Ltd.—Capital, $1,000,000, divided into 1,000,000 shares of a value of $1.00 each. Head Office: Victoria, B.C. Directors: Hon. E. Dewdney, Sir C. H. Tupper, Hon. F. Peters, W. Grant, J. T. Bethune, M. McGregor, A. McLennan. Formed for the purpose of acquiring the "Bunker Hill" mineral claim, situated on the South Fork of Kaslo Creek, in the Ainsworth Mining Division of West Kootenay, Province of British Columbia.

Kootenay and North-West Mining Co., Ltd.—Capital, $1,000,000. Shares $1.00 each. Trustees: Norman L. McInnes, James Hampton, William Drever, Head Office: Rossland, B.C.

Kootenay and Slocan Prospecting and Promoting Co., Ltd.— Capital, $100,000. Shares $25.00 each. Trustees: C. A. Holland, John Rayner, O. P. Skrine. Head Office: Vancouver, B.C.

Kootenay Co., Ltd.— Capital, $2,500,000. Shares $1.00 each. Trustees: E. G. Prior, A. C. Flummerfeet, J. J. Shallcross, Robt. Cassidy. Head Office: Victoria, B.C.

Kootenay Gold Fields Syndicate.— Capital, £20,000, in shares of £1. Registered 17th March, 1896. Head Office: 39 Lombard St., London, E.C.

Kootenay Gold, Silver and Copper Mining Co., Ltd.—Incorporated 22nd April, 1895. Authorized Capital $100,000, in shares of $25 each. Directors: Fred. Cope, Vancouver, President; T. R. Morrow, C. J. Mitchell, R. Warmington, Wm. Ralph, Dr. R. E. McKechnie. Head Office: George D. Scott, Secretary, Vancouver, B. C. The company has purchased the mineral claims 'Agnes' and 'Lucky Jim,' situated on Sabre creek, a tributary of Fish creek, West Kootenay district, Province of British Columbia. Assays from the outcrop of the 'Agnes' show:—Copper, 15 per cent.; silver from 64 to 103 oz.; gold 24 to 27.50. A small force was employed opening up the claim in 1896.

Kootenay-London Mining Co.—Capital, $1,000,000. Head Office: Rossland, B. C. Directors: G. Pritchard, W. Bennison, W. A. Campbell, A. J. McMillan, J. W. Cover, C. O. Lalonde, J. S. Paterson, H. Kitely and J. W. Boyd. Formed to purchase the "Comet No. 2" and "Annie" (fraction) mineral claims, situate on Red Mountain, in Trail Creek, mining division of West Kootenay district, B. C.

Kootenay Mine Exploration Co., Ltd.—Incorporated 1897. Capital, $200,000, in 40,000 shares of $5.00. Directors: G. Godderham, Toronto; R. H. Pope, M. P., Village of Cookshire, Que.; T. G. Blackstock, Toronto; J. W. Beatty, Toronto; D. Fasker, Toronto.

Kootenay Mining Co., Ltd.—Capital, $2,000,000. Shares $1.00 each. Head Office: Tacoma, Wash.

Lake Shore Mining Co., Ltd. — Capital, $1,500,000. Directors: B. B. Johnston, W. A. Lewthwaite, R. Hamilton, T. S. Sisson, J. E. Miller, all of Vancouver, B.C. Formed to acquire the mineral claims known as "Allerton," "Erie," and "Huronite," all situated on Harrison Lake, in the District of New Westminster, British Columbia.

Lardeau Mining and Development Co.—Incorporated 1897. Capital, $500,000, divided into 500,000 shares of a value of $1.00 each. Directors: F. B. Wells, John Abrahamson and E. L. Kinman, all of Revelstoke, B.C. Head Office: Revelstoke, B.C.

Lardeau Trout Lake Mining Syndicate, Ltd.—Capital, $500,000, divided into 1,000,000 shares of 50 cents each. Head Office: Victoria, B. C. Directors: G. D. Scott, K. Scott, F. Hilbert, all of Victoria, B.C. Formed for the purpose of mining in British Columbia.

Lee Mines of Slocan, Ltd.—Capital, $500,000, divided into 2,000,000 shares of 25 cents each. Head Office: Silverton, B.C. Directors: L. Alexander, M. R. W. Rathbone, H. B. Alexander, all of Sandon, B.C. Formed for the purpose of mining in British Columbia.

Legal Tender Mining and Development Co. of Slocan, Ltd. — Capital, $1,000,000, divided into 1,000,000 shares of a value of $1.00 each. Directors: J. F. McLaughlin, R. Scott, J. J. Franklin, of Rossland, B.C.; J. C. Hay, Listowel, Ont.; T. McLaughlin, Toronto, Ont. Head Office: Rossland, B.C. Formed for the purpose of mining in British Columbia.

Lodester Gold Mining and Development Co., Ltd.—Capital, $1,000,000, divided into 1,000,000 shares of $1.00 each. Head Office: Rossland. Directors: Jas. Cowan, R. Reddick, H. R. Dunlop, L. H. Schmidt, O. D. Casselman, W. A. Brown. Formed for the purpose of mining in British Columbia.

London and B. C. Alliance Syndicate, Ltd.—Capital, £15,100, divided into 15,000 ordinary shares of £1 each, and 100 founders' shares of £1 each. Head Office: 21 Great Winchester St., London, Eng. Formed for the purpose of mining in British Columbia.

Mabel Gold Mining Co.—Capital, $1,000,000. Shares $1.00 each. Head Office: Spokane, Wash.

Macleod Gold and Silver Mining Co., Ltd.—Capital $1,000,000, divided into 1,000,000 shares of $1.00 each. Head Office; Kaslo, B. C. Directors: S. B. Steele, Macleod Alta, F. Steele, Kaslo; T. M. Gibson, Kaslo. Formed for the purpose of mining in British Columbia.

Mammoth Group Mining Co.—Capital, $1,000,000. Shares $1.00 each. Head Office: Spokane, Wash.

Maritime Exploration Co. of British Columbia, Ltd.—Capital, $1,000,000. Shares $1.00 each. Head Office: Rossland, B. C. Trustees: A. B. McKenzie, Alex. Dick, Frank A. Baird.

Maritime Mining and Development Co., Ltd.—Capital $1,000,000, divided into 1,000,000 shares of $1.00 each. Head Office: Rossland, B. C. Directors: D. C. Blair, Truro, N. S.; F. S. Andrews and Ashton F. Andrews of Slocan City, B. C. Formed for the purpose of mining in British Columbia.

Menominee and Marinette Hydraulic Gold Mining Co.—Capital, $600,000, divided into 24,000 shares of $25.00 each. Head Office: Menominee, Mich.

Mica Manufacturing Co., Ltd.—Registered 1896. Authorized Capital, £80,000. Directors: Sir Samuel Channing, C. E., London; Sir James Rivett Carnac, Weybridge; Sir Walter R. Livey, Lee, Kent; John S. Green, London. Head Office: Frank Fuller, Secretary, Tower Chambers, Finsbury Pavement, London, E.C., England. Canadian Office: T. J. Watters, Resident Manager, Ottawa, Ont. Formed to acquire the mineral rights of the Lake Gerard Group of mica properties, comprising about 1700 acres in the Provinces of Ontario and Quebec. The plant and machinery includes 23 power presses for cutting irregular shaped discs and segments, with electric dynamo in mica factory at Ottawa.

Miller Creek Mining Co.—Capital, $1,000,000. Shares $1.00 each. Head Office: Spokane, Wash.

Mineral King Mining and Development Co. of Ontario, Ltd.—Capital, $100,000. Shares of $1.00 each. Directors: W. T. Strong, E. Meredith, C. B. Hunt, G. B. Kirk and A. H. Brown. Head Office: London, Ont.

Miners' and Prospectors' Exchange and Development Co., Ltd.—Capital, $5,000. Shares $1.00 each. Trustees: Dan McDermid, George Owen, J. Howson, T. J. Corrigan, W. A. Galliher. Head Office: Rossland, B.C.

Minerva Mining and Marble Co.—Directors: Benjamin Raper, President; Alfred Raper, James Raper, Elijah Priest, C.E. Head Office: (Drawer 2) Nanaimo, B.C. The company's property consists of 160 acres, containing a large deposit of black and white streaked marbles, also eight mineral claims, two 1,500 ft. x 600 ft., and four 1,500 ft. x 1,500 ft. Development work is being pushed forward, a small force being employed. The gold deposits are reported to be showing up highly satisfactorily, and a mill may be erected in 1897.

Mines Development Co., Ltd.—Capital, $1,000,000, divided into 1,000,000 shares of $1 each. Head Office: Vancouver, B.C. Directors: J. Towers, F. J. Wheeler, G. J. Wonder, all of Vancouver, B.C. Formed for the purpose of mining in British Columbia.

Mines Investment Association of Ontario, Ltd.—Capital, $100,000. Shares $100 each. Directors: Geo. A. Cox, Geo. H. Bertram, Albert Horton. Head Office: Toronto, Ont.

Mines Selection Co. of Toronto, Ltd.—Capital. $200,000. Shares 25 cents each. Directors: C. B. Watts, Jas. Simpson, C. S. Ellis, E. Whaley, J. H. L. Patterson, Wm. Marshall, Geo. S. Wallis, W. C. Fox. Head Office: Toronto, Ont.

Moir Granite Co.—Incorporated 1891. Authorized Capital, $100,000, in shares of $25. Directors: D. W. Moir, Stanstead Que.; G. H. House, Beebe Plain, Que.; S. Stevens, Stanstead Plain, Que.: D. W. Davis, Derby Line, Vt.; John T. Foster, Derby Line, Vt. Head Office: George H. House, Secretary-Treasurer, Beebe Plain, P. Q. Formed for the purpose of quarrying and dealing in granite and other stone, etc. The company's property at date, contains 200 acres on lot 1 in the 4th range, and 80 acres (on lots 3, 4 and 5) in the 5th range of Stanstead, Que. 30 to 40 men employed. Quarries situate 2½ miles from Beebe Plain and Stanstead Junction, on the line of the Boston and Main Railway. Seventy persons employed. At date a branch line is being constructed to connect the quarries with the B. & M. Railway. Machinery equipment comprises two 50 h. p. boilers, Rand steam drills, eight derricks, six steam polishing machines, one turning lathe, etc.

Montana Gold Mining Co. (Foreign.)—Capital, $1,500,000, divided into 1,500,000 shares of a value of $1.00 each. Head Office: Spokane, Wash. Formed for the purpose of mining in British Columbia.

Montreal and British Columbia Prospecting and Promoting Co., Ltd.—Registered 1894. Authorized Capital, $20,000, in shares of $5. Directors: F. C. Innes, President; S. O. Richards, Vice-President: J. M. Browning. Head Office: C. C. Bennett, Secretary, Vancouver, B. C. The company has several claims in Cariboo and Kootenay districts, on which development is being done.

Morning Mining Co., Ltd.—Capital, $1,000,000. Shares $1.00 each. Trustees: J. D. Farrell, E. J. Bowman, P. J. Hickey. Head Office: Sandon, B. C.

Myers Flat Gold Mining Co., Ltd.—Capital, $100,000, divided into 400,000 shares of 25 cents each. Head Office: Victoria, B. C. Directors: M. Meiss, A. Calderwood, J. Murphy. Formed for the following purpose:—To purchase the "Elephant," "Jumbo," "Mammoth" and "Nepawa" mineral claims situate at at Myers Flat, Fairview District, British Columbia.

Nanaimo-Rossland Mining Co., Ltd.—Incorporated 1895. Authorized Capital, $500,000. Directors: C. U. Westwood, Nanaimo, B.C.; A. Jenkins, Nanaimo; Jas. McGregor, Nanaimo, B.C.; W. K. Leighton, Nanaimo, B.C.; Thos. Kitchin, Nanaimo, B.C. Head Office: Nanaimo, B.C. Formed to carry on min- in British Columbia.

National Mining and Development Co., Ltd.—Capital, $1000,000. Shares $1.00 each. Directors: Alex. A. Allan, Andrew Darling, Frederick Wyld, John Flett, R. Millichamp, Alex. A. McMichael, Alfred D. Benjamin, Hugh Scott, James Pearson, Chas. A. Godson. Head Office: Rothesay, N.B. Formed to acquire the "North Star" mineral claim, situate in Camp Fairview in the Osoyoos Division of Yale District, the "Victoria" mineral claim, situate in the Kettle River Mining Division, the "Mary Ann" mineral claim, situate in the Kettle River Mining Division, the "Scott" mineral claim, situate in Rock Creek, in the Kettle River Mining Division, the "Gold Drop" mineral claim, situate in the Trail Creek Mining Division of West Kootenay, the "Chartotte L." the "Margarethe S." and "Irma" mineral claims, situate on the East Fork of the North Fork of the Salmon

River, in the Nelson River Mining Division ; and especially to enter into a certain agreement in that behalf, between Charles Arthur Godson, and the said company so as to be incorporated, and to operate the said mineral claims.

National Mining and Development Co., Ltd.—Capital, $650,000. Shares 10 cents each. Trustees: C. Grant, D. D. Birks, J. L. Whitney. Head Office : Rossland, B.C.

Nelson and Ontario Prospecting and Development Co., Ltd.—Capital, $150,000. Shares $1.00 each. Trustees: E. C. Arthur, Thoburn Allan, E. C. Senkler, B. C. Rainsford. Head Office : Nelson, B.C.

Nelson Development and Improvement Co., Ltd.—Capital, $1,000,000, divided into 1,000,000 shares of $1.00 each. Head Office : Nelson, B.C. Directors: H. R. Bellamy, D. LaBau, J. Dover, G. Stanley, F. Irvine, R. E. Lemon, F. L. Osler, all of Nelson, B.C. Formed for the purpose of carrying on a general mining and brokerage business in British Columbia.

Nelson Mining and Development Co., Ltd.—Capital, $500,000. Shares $1.00 each. Trustees : Wm. C. McLean, Jno. A. Gibson, D. LaBau, R. Renwick, Colin Brown, Fred. Williamson. Head Office : Nelson B.C.

Nelson-Poorman Gold Mining Co., Ltd.—Capital, $250,000, divided into 1,000,000 shares of a value of 25 cents each. Head Office : Nelson, B. C. Formed for the purpose of acquiring "Poorman," "White," "Hardscrabble," "Hardup," "Election" and "Myemer" mineral claims, all situated in the Nelson Mining Division, B. C.

Nelson Salmon Mining and Development Co., Ltd.—Capital, $2,500,000. Shares $1.00 each. Trustees: R. A. Chisholm, N. McLeod, J. L. Parker, T. F. Trask. Head Office : Rossland, B.C.

Nelson Slocan Prospecting and Mining Co., Ltd.—Capital, $1,000,000. Shares $1.00 each. Trustees: Wm. A. Macdonald, F. Fletcher, F. W. Peters, A. Mainwaring-Johnson, Chas. E. Race, H. R. Cameron. Head Office : Nelson, B. C.

New Brunswick Mining and Development Co., Ltd.—Capital, $1,000,000. Shares $1.00 each. Trustees: Geo. E. Foster, F. A. Baird, T. R. Morrow, A. B. Acorn, Henry Kehoe, F. M. McLeod, Thos. M. Daly. Head Office : Rossland, B. C. Formed to purchase the "R. W. T." mineral claim, situate on the North Fork of Carpenter Creek, in the Slocan mining division of West Kootenay district, in the Province of British Columbia, about eight miles from Three Forks.

New Fraser River Gold Mines, Ltd.—Capital, £75,000, divided into 75,000 shares of £1 each. Head Office situated in England. Formed for the purpose of mining in British Columbia.

New Ontario Mining and Development Co., Ltd.—Capital, $100,000. Shares 10 cents each. Directors: A. G. Elliot, Jno. Murchison, David C. Taylor, James Warren, C. E. A. Thompson. Head Office : Lucknow, Ont.

Newport Plaster Mining and Manufacturing Co., Ltd. — Incorporated 1892. Authorized Capital, $40,000, in 400 shares of $100. Directors: C. H. Dimock, President; E. N. Dimock, Secretary; J. B. King. Head Office: Windsor, N.S. The company's property contains 156 acres, upon which is operated gypsum quarries at Newport, Hants County, Nova Scotia, within half a mile from Newport Station, on the Windsor & Annapolis Railway, and six miles from shipping wharf at Windsor. In addition to the white plaster mines at Newport, the company controls the output of quarries at Miller's Creek and Walton, and a land plaster quarry known as "Grant's" at Summerville.

New Rockland Slate Co.—Capital, $150,000, fully subscribed and paid up. Directors: Hon. G. A. Drummond, President; James Ferrier, Sutherland Stayner,

F. R. Redpath, A. Dunbar Taylor. Head Office : T. P. Bacon, Secretary-Treasurer, 377 St. Paul Street, Montreal. This company owns lots 21, 22, 23 of the 4th Range of Melbourne, and operates the large slate quarry situate (lot 23) at New Rockland, in the Province of Quebec. Two hundred men employed. Average yearly production, about 6,500 tons. The manufactures include roofing slates, billiard table tops, mantels, wash tubs, hearth stones, tiles, etc. Quarries and works, equipped with an excellent plant, with first class water power from the Salmon river, transmitted to the works by cable, and an outfit of travelling derricks, etc. The quarry has at present a depth of over 200 ft., and is connected with the main line of the Grand Trunk Railway, 4 miles distant, by a narrow guage railway, by which a great saving in the cost of transportation is effected.

New York Kootenay Mining Co., Ltd.—Capital, $1,000,000, divided into 1,000,000 shares of $1.00 each. Head Office : New York. Formed for the purpose of mining in the United States and the Dominion of Canada.

New York Slocan Mining and Concentrating Co. — Capital, $500,000, divided into 500,000 shares of a value of $1.00 each. Head Office : Spokane, Wash. Formed for the purpose of mining in British Columbia.

Nickel Plate Mining Co., Ltd.— Incorporated 1895. Authorized Capital, $500,000, in shares of $1.00. Mines Office : Wm. Fitzwilliam, Superintendent, Trail, B.C, Formed to acquire and work the Nickel Plate and other gold claims in the Province of British Columbia. A shaft has been sunk and, at the 100 ft. level, drifts have been run along the vein in both directions and a cross-cut, after passing through several small seams of good grade ore, has at last tapped a 6 ft. ledge. On this vein drifts are being run both ways showing two pay streaks, each about 20 inches wide, separated by comparatively barren ledge matter. Several average samples have gone as high as $275.00 to the ton in gold. The drifts on the main vein show good bodies of solid ore, avergaing from $80 to $100 per ton in gold. About 150 tons of shipping ore are on the dump. A steam hoist and a sinking pump are used.

Noble Three Mining Co., Ltd.—Capital, $1,000,000. Shares $1.00 each. Trustees : W. J. Herald, John McKane, Alex. Miller. Head Office : Rossland, B.C.

North American Graphite Co., Ltd.—Capital, $250,000. Shares $100 each. Directors. Alex. Lumsden, N. Chas. Sparks, Geo. H. Perley, H. P. H. Burmmell, Wm. H. Perley. Head Office: H. P. H. Brummell, *Manager*, Ottawa, Ont. Owns and operates a property containing 219 acres and situate on Lot 28, R. VI., and Lots 23 and 28, R. V., Township of Buckingham, Ottawa County, Province of Quebec. Equipped with Raymond mill and other plant, including electric lighting. 30 persons employed in 1895.

North American Mining Co., Ltd.—Capital, $500, divided into 500 shares of $1 each. Head Office ; Buffalo, N.Y. Formed for the purpose of mining in British Columbia.

Northern Ontario Development Co. (Ltd.)—Capital, $5,000,000. Shares $1.00 each. Directors : F. G. Morely, S. G. Redway, Jno. N. Lee, G. A. Harper. Head Office : Toronto, Ont.

North Star Mining and Development Co. of Toronto, Ltd.—Capital, $5,000,000. Shares $1.00 each. Directors : Sir Adolph Caron, M.P.; Sir A. Chapleau, Quebec ; George J. Gould, New York ; Hon. F. Clemow, Ottawa ; Hon. Peter White, Pembroke ; Hon. J. O'Brien, Montreal ; E. Gurney, Toronto ; Dr. Seward Webb, New York ; Chas. Riordan, St. Catherines ; S. Nordheimer, Toronto ; R. P. Soundberry, New York ; D. J. Seligman, New York ; Thos. Marks, Port Arthur ; Wm. Shaw, Quebec ; A. M. Crosby, Toronto ; John Gilmour, Ottawa ; A. A. Taillon, Ottawa ; E. P. Graneau, Quebec ; L. B. Bell, New York ; J. W. McRae, Ottawa ; Henry Hogan, Montreal ; John A. Carland, Toronto ; W. A. Allan, Ottawa ; Horace Kennedy, Quebec ; John M. Burke, Rossland. Formed to carry on mining in the Dominion of Canada.

North-West Pacific Mining and Development Co., Ltd.—Capital, $500,000. Shares $1.00 each. Trustees: J. W. Campion, W. Nicol, W. H, Armstrong, Head Office: Vancouver, B.C.

Nova Scotia Gypsum Co., Ltd.—Incorporated 1894. Authorized Capital, $2,000,000, in shares of $20.00. Directors: Vincent King, New York; J. E. Peters, Port Greville, N.S.; J. Taggart, Parrsboro, N.S. Head Office: J. Taggart, Parrsboro, N.S. Formed to quarry gypsum in the Province of Nova Scotia.

Occidental Mining and Exploration Co. of Ottawa, Ltd.—Capital, $1,000,000. Shares $1.00 each. Directors: R. H. Preston, R. F. Preston, F. W. Bindon, J. M. Cullies, T. McVeity, A. Hudson, H. Waters, A. Bannerman, W. A. Jamieson, N. A. Goodwin. Head Office: Ottawa, Ont.

Occidental Mining and Milling Co., Ltd.—Capital, $600,000. Shares $1.00 each. Trustees: Archibald J. McKay, James A. A. Fraser, Henry T. Sheeton. Head Office: Vancouver, B. C.

Old Flag Gold Mining Co., Ltd.—Capital, $1,500,000. Shares $1.00 each. Trustees: Chas. M. Carpenter, Robert Dixon, Jno. B. Henderson, John E. Crane. Head Office: Rossland, B. C. Formed to acquire the mineral claims known as the "Eureka," "Esmeralda," and "Old Flag," situate in the Trail Creek mining division of West Kootenay district, British Columbia.

Ontario and Western Mining and Development Co., Ltd. — Capital, $1,000,000. Shares $1.00 each. Directors: Jno. B. Laidlaw, H. C. Dixon, Wm. H. Hall, James R. Roaf, Chas. R. Tounley. Head Office: Toronto, Ont.

Ontario Exploration Co., Ltd.—Registered 10th May, 1895. Authorized Capital, £12,500, in shares of £1. Directors: W. S. Ferguson, Harold Thomas, R. Pearce, Capt. Inman, Randal Vogan. Head Office: C. R. Briggs, 61 and 62 Broad St. Avenue, London, E. C., England. Formed to acquire and work the "Yellow Girl" and other claims in Ontario.

Ontario Graphite Co., Ltd.—Incorporated 1896. Authorized Capital, $200,000, in shares of $100. Directors: G. P. Brophy, J. P. Brophy, S. H. Fleming, J. W. McRae, Hector McRae. Head Office; Hector McRae, Managing Director, Ottawa. Owns and operates a property, comprising lots 16, 17, 18 and 19, at White Fish Lake, Township of Brougham, Province of Ontario. Worked by open cuts. 25 persons employed in 1896. Output shipped *via* Calabogie station on the Kingston and Pembroke Railway, to Ottawa, where a small milling plant has been erected.

Ontario Miners' Development Co., Ltd.—Incorporated 1896. Authorized Capital, $150,000, in shares of $5. Directors: James Connell and G. O. Clavette, Port Arthur; John Flett, Hume B. Proudfoot, A. Wilson and J. Van. Sommer, Toronto; H. N. Kitson, Hamilton, Ont. Head Office: Toronto. Formed to acquire and work mineral lands and mines in Ontario.

Ontario Mines Assaying and Smelting Co., Ltd.—Capital, $75,000. Shares $1.00 each. Directors: William Henry, William D. Pettigrew, Walter Jordan, Hunter Cooper, George H. West, William S. Grout. Head Office: Rat Portage, Ontario.

Ontario Peat Fuel Co., Ltd.—Incorporated 1892. Authorized Capital, $300,000, in shares of $100. Directors: A. A. Dickson, President; A. Jardine, W. A. Allan, W. B. Bayley, George H. Perley, Hon. R. M. Wells, J. R. Silliman. Head Office: J. R. Silliman, Sec'y Treasurer, Room 29, Bank of Commerce Building, Toronto. This company has purchased the right to take and remove all the peat, clay, earth and other material from 5,000 acres of peat land in the County of Welland, paying therefor the sum of $1,580 per annum for fifteen years and thereafter a rental of 25 cents per ton. Peat moss covers the whole area to a depth of about two feet, and the company has already cut from an area of about 3 acres, something like 2,000 tons,

This moss litter is of a very superior quality for stable bedding, and we understand a contract has been made with an American firm to purchase not less than 1,000 tons for the first year, and to increase the purchase thereafter by not less than 5,000.

Ontario Prospectors' Mining and Development Co., Ltd.—Capital, $1,000,000. Shares $1.00 each. Directors: Newton C. Westerfield, Neil Campbell, James E. Wickham, Estras B. Truby, George A. Hamilton, James Ogden. Head Office: Rat Portage, Ont.

Original Swede Boys' Prospecting Co. of Rainy River District, Ltd.—Capital, $90,000. Shares $1.00 each. Directors: John Berg, George Asplund, John Franson, August Franson, Eric Franson. Head Office: Fort Frances, Ont.

Oriole Syndicate, Ltd.— Capital, £5,000. Shares £1 each. Head Office: England.

Pacific Mining and Construction Co., Ltd.— Capital, $20,000, divided into 20,000 shares of $1.00 each. Head Office: Tacoma, Wash. Formed for the purpose of mining in British Columbia.

Pavo Consolidated Mines Ltd.—Incorporated 1897. Capital $150,000, divided into 1,500,000 shares of a value of 10 cents each. Head Office: Rossland, B.C. Directors: C. M. Cowper-Coles, Rossland; C. E. Wynn-Johnson, Rossland; O. Plunkett, Vancouver; J. L. G. Abbott, of Rossland, B.C. Formed to acquire the mineral claims "Oregon," "Williamette," "Red Bird," "Phonograph," "Pavo," "Germania," "Nora," all situated near Waterloo Camp, in the Trail Creek Mining Division, British Columbia.

Peoria Mining and Milling Co., Ltd.—Capital, $1,000,000. Shares $1.00 each. Trustees: Wm. W. Spinks, Robert J. Bealey, Arthur S. Goodeve, William A. Potter, John E. Crain. Head Office: Rossland, B.C. Formed to acquire the mineral claims known as the "Snowflake," "Harriet," and "Seattle," situate in the Ainsworth Mining Division, and the "Peoria," situate in the New Denver Mining Division of West Kootenay District, British Columbia, from the present owners thereof, either for money or fully paid up shares of the Company.

Phœnix Consolidated Mining Co., Ltd.—Incorporated 1896. Head Office: Sandon, B.C. Diectors: John D. Farrell, J. E. Poupore, M. W. Burner, G. McL. Brown and Jas. Burridge. Capital, $1750,000. Formed to purchase the "Phœnix," "Libby R" and "Alhambra" mineral claims, situate on the north fork of Carpenter Creek, in the Slocan Mining Division, British Columbia.

Phoenix Gold Mining Co., Ltd.—Incorporated 1897. Capital, $20,000, divided into 400 shares of $50 each. Directors: G. F. McKay, E. Kennedy, J. A. Fraser, J. Fraser, C. Fraser, all of New Glasgow. Formed for the purpose of mining in Nova Scotia.

Picton Development Syndicate, Ltd.— Incorporated 1896, to acquire the "Picton Mineral Claim," situate in the Nelson Mining Division of the District of West Kootenay. Capital, $15,000, divided into 3,000 shares of a value of $5 each. Directors: J. E. Turner, Nelson; S. M. Okell, Victoria; J. F. Pearson, Manchester, Eng. Head Office: Nelson, B.C.

Pierre Development Co.— Capital, $100,000. Shares $1.00 each. Head Office: Spokane, Wash.

Pilot Bay Mining and Development Co., Ltd. — Capital, $1,000,000, divided into 1,000,000 shares of $1.00 each. Head Office: Rossland, B.C. Directors: J. Cowan, R. Reddick, H. R. Dunlop, L. H. Schmidt, O. D. Casselman, W. A. Brown. Formed for the purpose of mining in British Columbia.

Pioneer Development and Exploration Co. of B.C.—Registered in London, Eng., 17th June. Capital, £150,000 stg. Formed to adopt and carry into effect an agreement made between Charles Tetley of Vancouver, B.C., of the first part, and this company of the other part, and also an agreement expressed to be made between the Kootenay Promotion Syndicate, Ltd., of the one part and the company of the other part, to seek for and secure openings for the employment of capital in British Columbia; to acquire mines, mining rights, etc. Head Office: 9 and 10 King Street, Cheapside, London.

Prescott Mining Co., Ltd.—Capital, $300,000, divided into shares of a par value of 25 cents each. Head Office: Vancouver, B.C. Directors: F. C. Innes, O. Plunkett, H. Abbott. Formed for the purpose of purchasing the "Prescott" group of mineral claims situated on Four Mile Creek, in the Slocan District, Province of British Columbia.

Prospecting Syndicate of British Columbia.—Incorporated 1895. Authorized Capital, £10,000, in shares of £1. Directors: Edward Mahon, J. W. McFarland, Gilbert Mahon. Head Office: G. G. Scott, Secretary, 519 Hastings St., Vancouver, B.C. Formed for the purpose of acquiring gold and other mineral properties in that province. The functions of this company will be not only the acquiring of suitable properties, but the working up of connections with the London market for their disposition. The company holds options at date on the Crown Point Group (150) acres), gold and silver; Oro Fino group (250 acres), gold, copper; Orphan group (50 acres), gold, copper; Jewel-Denero (100 acres), gold (telluerides) and silver; one-third interest in the Climax (50 acres), gold, copper; one-half interest in the Lulu (50 acres), gold, and 110,000 shares in the Silver King Mining Co. The above options, upon the total purchase price of which there remained to be paid at date £18,088, are situated in the Boundary Creek District of British Columbia.

Providence Mining and Developing Co., Ltd.—Capital, $300,000. Shares 25 cents each. Trustees: J. O. Tretheway, L. G. Munn, W. G. Tretheway. Head Office: Vancouver, B.C. Formed to acquire and take over the "Silver Bell" mineral claims, situate on the west shore of Harrison Lake, in the Province of British Columbia.

Provincial Mining, Development and Investment Co. of Toronto, Ltd.—Capital, $1,250,000. Shares $1.00 each. Directors: Sydney F. McKinnon, George J. Ashworth, O. Sprague. Head Office: Toronto, Ont.

Purcell Mining Corporation, Ltd.—Capital, $500,000. Shares $1.00 each. Head Office: Spokane, Wash., U.S.A.

Quadra Mining and Milling Co., Ltd.—Incorporated 1896. Authorized Capital, $500,000. Directors: G. A. Kirk, Thos. Shotbold, John Bryden. Head Office: Victoria. Formed to acquire within the Alberni mining division, on Vancouver Island, the mineral claims known as the "Ophir" and "Last Chance."

Rainy River Mining, Exploring and Development Co., Ltd.—Capital, $750,000. Shares $1.00 each. Directors: Wm. Colcleugh, Geo. Brebber, James Morrison, M. McPhadden, Wm. Conor, Robt. Brown, J. P. Noonan. Head Office: Mount Forest, Ont. Formed to purchase and acquire mining locations "D 605 and D 607," in the district of Rainy River, Ontario.

Red Star Mining and Development Co.—Capital, $250,000 divided into 1,000,000 shares of 25 cents each. Directors: J. L. Card, C. H. DeBeck, H. J. Stubbs, R. L. Reid, H. J. A. Burnett, all of New Westminster, B. C. Head Office: New Westminster. Formed to acquire the mineral claim "Red Star," situated on the north side of Kaslo Creek, in the district of West Kootenay, Province of British Columbia.

Regent Mining and Development Co., Ltd.—Capital, $1,000,000. Shares $1.00 each. Trustees: Wm. G. H. Todd, Chas. B. McCluskey, John W. Switzer, Head Office: Sandon, B. C.

Regina Mining Co. of Slocan, Ltd.—Capital, $200,000. Shares 50 cents each. Trustees: C. S. Douglas, W. G. Tretheway, Chas. Layland. Head Office: Vancouver, B. C. Formed to purchase the "Regina" mineral claim, situated on Two Friends Mountain, Springer Creek, Slocan division, West Kootenay, in the Province of British Columbia.

Reliance Mining Co., Ltd.—Capital, $500,000, divided into 500,000 shares of a value of $1.00 each. Head Office: Vancouver, B. C. Directors: S. H. Baker, F. Cope, J. G. Crawford, L. Hind, J. D. Breeze. Formed to acquire and work the "Toronto" mineral claim, situate in the Osoyoos district, Yale division, British Columbia.

Revelstoke, Lardeau and Slocan Mining and Development Co., Ltd.—Capital, $1,000,000, divided into 1,000,000 shares of a value of $1.00 each. Head Office: Revelstoke, B. C. Directors: W. White, Slocan City; J. D. Sibbald, Revelstoke; C. E. Shaw, Revelstoke. Formed for the purpose of mining in British Columbia.

Richmond Developing and Mining Co., Ltd.—Incorporated 1895. Authorized Capital, $120,000, in shares of $10. Directors: Alex. McLeod, Chas. Barney, John T. Errington. Head Office: Vancouver, B.C. Formed to adopt and carry into effect, with or without modification, an agreement dated the 29th October, 1895, between Alex. McLeod, Charles Barney and John T. Errington, and to carry on mining in British Columbia.

Ripley Mining Co., Ltd.—Capital, $1,000,000. Shares $1.00 each. Trustees: Percy W. Evans, Robt. B. Skinner, David G. Marshall. Head Office: Vancouver, B.C.

Robinson Mining Co.—Capital, $1,000,000, divided into 1,000,000 shares of $1.00 each. Head Office: Spokane, Wash. Formed for the purpose of mining in British Columbia.

Rossland Development Co., Ltd.—Capital, $1,000,000. Shares $1.00 each. Trustees: John L. Whitney, L. H. Northey, E. L. Clark, Louis L. DeNoin. Head Office: Rossland, B.C. Formed to purchase the "Ivanhoe" and "Bell" mineral claims, situate on Salmon River in the Nelson Mining Division of West Kootenay District, in the Province of British Columbia.

Rossland Gold Mining, Development and Investment Co., Ltd.—Capital, $2,500,000, divided into 2,500,000 shares of $1.00 each. Head Office: Rochester, N.Y.

Rossland Kootenay Mining and Development Co., Ltd.—Capital, $80,000. Shares $1.00 each. Directors: Horatio N. Coates, William G. Scovil, John A. McAvity, James M. Scovil, Charles G. Milligan, Stephen S. McAvity, Isaac Burpee, Frederick D. Wedderburn. Head Office: Parish of Hampton, N.B.

Rossland-Slocan Mines Development Co., Ltd.—Capital, $1,000,000. Shares 10 cents each. Trustees: R. C. Macdonald, J. L. Parker, Geo. E. Toms. Head Office: Rossland, B.C.

Royal Canadian Mining and Development Co., Ltd.—Capital, $1,500,000. Shares $1.00 each. Trustees: Jno. Kirkup, Thos. M. Daly, Wm. H. Cooper, Wm. B. Townsend, Jno. Moynahan, W. G. Kennedy, John L. G. Abbott. Head Office: Rossland, B.C. Formed to purchase "The Golden Eagle," "The Red Fox," "The Bonanza Queen," "The Rayneer," "The MacDonald," and "The Bernice" mineral claims, all situate in the Trail Creek Mining Division of West Kootenay, British Columbia.

Royal George Mining and Development Co.—Capital $1,000,000, divided into 10,000,000 shares of 10 cents each. Head Offices: Victoria and Kamloops, B.C. Directors: T. J. Jones, G. H. Haynes, James M. Palmer. Formed for the purpose of mining in British Columbia.

Rupert Land Mining Co. of Ontario, Ltd.—Capital, $200,000. Shares $1.00 each. Directors: Robt. J. Campbell, Henry A. Costigan, Thos. H. Lock, Robert R. Wilson, Jas. Thompson, Joseph E. Huxley, John Brown. Head Office: Rat Portage, Ont.

Ruth-Esther Gold Mining Co.—Capital, $1,000,000, divided into 1,000,000 shares of $1.00 each. Head Office: Spokane, Wash. Formed for the purpose of mining in British Columbia.

Salmon River Consolidated Mining Co.—Capital, $1,000,000, divided into 1,000,000 shares of a value of $1 each. Head Office: Spokane, Wash. Formed for the purpose of carrying on mining in British Columbia.

Salmon River Gold Mining Co. of British Columbia.— Capital, $1,500,000. Shares $1 each. Head Office: Spokane, Wash.

Santa Marie Silver Mining Co.— Capital, $1,000,000. Shares $1.00 each. Head Office: Spokane, Wash.

Sarnia Salt Co., Ltd.—Incorporated 28th July, 1892. Authorized Capital, $20,000, in 400 shares of $50 each. Directors: Harrison Corey, Petrolia, Martin J. Woodward, Petrolia; F. B. Wilkinson, M.B., Sarnia, Ont. Head Office: Sarnia, Ont. Formed to acquire the plant, premises, business, stock in trade, credits and assets of every kind and description of the Sarnia Salt Co., and to carry on the business of the said company in the production and manufacture of salt and all other articles that may be made therefrom. Operates at Sarnia a well 1,600 feet at date.

Sault Ste. Marie Mining Co., Ltd.— Capital, $1,000,000. Shares $1.00 each. Trustees: W. S. Boyd, Daniel Harris, John S. Clute, Jr., Geo Lemon, David Manchester. Head Office: Sault Ste. Marie.

Schroeder Creek Consolidated Mining and Development Co., Ltd.— Capital, $1,000,000, divided into 1,000,000 shares of a value of $1.00 each. Head Office: Rossland, B.C. Directors: T. M. Daly, J. Lane, J. M. Clark, J. M. Robinson, G. R. Coldwell. Formed for the purpose of mining in British Columbia.

Scottish Columbia Mining and Development Co., Ltd.—Capital, $1,000,000. Shares $1.00 each. Trustees: George R. Maxwell, John C. McLogan, Peter R. Ritchie, John T. Wilkinson, Alexander Calley, Jas. S. McLeod, James B. Smith. Head Office: Vancouver, B.C.

Scottish Mining and Investment Corporation, Ltd.—Capital, $2,000,000. Shares $1.00. Trustees: Jas. M. Buxton. J. G. Crawford, Wm. T. Stein. Head Office: Vancouver, B. C.

Shamrock and Thistle Mining Co., Ltd.—Capital, $100,000, divided into 400,000 shares of 25 cents each. Head Office: Vancouver, B.C. Directors: J. C. Keith, Vancouver; R. B. Johnson, F. W. Boultbee, of Vancouver. Formed to acquire the mineral claims known as the "Shamrock" and "Thistle," situated on Ganer Creek, in the Trout Lake Mining District of West Kootenay, British Columbia.

Sheriff Mining Co.— Capital, $1,000,000, divided into 1,000,000 shares of $1.00 each. Head Office: Spokane, Wash. Formed for the purpose of mining in British Columbia.

Silent Friend Mining and Development Co., Ltd.—Capital, $1,000,000. Shares $1.00 each. Trustees: John A. Smith, J. S. McCullough, W. J. Green. Head Office: Rossland, B.C.

Skookum Mining Co.—Capital $250,000. Shares $1.00 each. Head Office: Spokane, Wash.

Slocan and Spokane Mining Co.—Capital $1,000,000. Shares $1.00 each. Head Office : Spokane, Wash.

Slocan-Cariboo Mining and Development Co., Ltd.—Capital, $1,000,000. Shares 10 cents. Trustees : E. Morrison, F. B. Gregory, F. S. Pope, C. T. Lyon, F. H. B. Lyon. Head Office : Sandon, B.C. Formed to purchase the "Rosedale," "Flower," and "May" mineral claims, on Payne Mountain, near Sandon, in West Kootenay District, and three leasehold and one freehold placer claims on Canadian Creek, Cariboo, B.C.

Slocan Development Co., Ltd.—Capital $1,000,000. Shares $1.00 each. Trustees : Walter Macdonald, William Tedford, Henry Aking, Frederick G. White, William J. Green. Head Office : Rossland, B.C.

Slocan Gold and Silver Mining Co., Ltd.— Capital, $1,000,000. Shares $1.00 each. Trustees: John A. Thompson, Hector McPherson, F. S. Anderson. Head Office: Slocan City, B. C.

Slocan Lake Prospecting and Development Co., Ltd.—Capital, $150,000, divided into 1,500,000 shares of 10 cents each. Directors : G. H. Suckling, F. W. Bauer, T. Parker, E. W. Liljegran, J. S. Clute, J. Henderson, E. T. Bartlett. Head Office: Rossland. Formed for the purpose of mining in British Columbia.

Slocan Lemon Creek Mining Co., Ltd.—Capital, $1,000,000, divided into 1,000,000 shares of $1.00 each. Directors: J. F. McCrae, C. J. Campbell, T. Anderson, all of Rossland, B. C. Head Office: Rossland, B. C. Formed for the purpose of mining in British Columbia.

Slocan Liberty Hill Mining Co.—Capital, $1,200,000. Shares $1.00 each. Head Office: Spokane, Wash.

Slocan Reciprocity Mining Co.— Capital, $1,000,000, divided into 1,000,000 shares of $1.00 each. Head Office: Spokane, Wash. Formed for the purpose of mining in British Columbia.

Slocan Western Mining Co., Ltd.—Capital, $1,000,000, divided into 1,000,000 shares of $1.00 each. Directors: C. C. Woodhouse, Jr., H. E. D. Merry, R. T. Penrose. Head Office: Rossland, B. C. Formed for the purpose of mining in British Columbia.

Slumach Mining Co., Ltd.—Capital, $500,000. Shares $1.00 each. Trustees : Bartley W. Shiles, John Morrison, Fred R. Glover. Head Office : New Westminster, B.C.

Soo Mining and Exploration Co., Ltd.—Capital, $99,000. Shares $1.00 each. Directors : C. S. Beadle, A. B. Cracknell, G. C. Ramsey, G. S. Michael, C. S. Van Horne, A. Scanlan, D. McLeod, E. Harrison, Jos. Cozens, M. McFadden. Head Office : Sault Ste. Marie, Ont.

Spencer Consolidated Mining Corporation, Ltd. — Capital, $5,000,000. Shares $5.00 each. Trustees : William F. Gore, R. A. Anderson, Wm. McCraney, Frank Spencer. Head Office : London, Eng.

Spokane-Kaslo Mining and Milling Co.—Capital, $900,000. Shares $1.00 each. Head Office : Spokane, Wash.

Spratt Copper and Gold Co.— Capital, $1,000,000 in 1,000,000 shares of $1.00 each. Head Office : Seattle, Wash. Formed for the purpose of mining in British Columbia.

Standard Mining and Development Co., Ltd.—Capital, $1,000,000, divided into 1,000,000 shares of $1.00 each. Head Office: Rossland, B.C. Directors: C. A. Godson, F. T. Claxom, G. E. Powell, Victoria, B.C.; H. Thorne, J. Pearson, Toronto, Ont. Formed for the purpose of mining in British Columbia.

Stanstead Granite Co., Ltd.—Incorporated in 1893 by Dominion Charter. Authorized Capital, $100,000, in shares of $100. Directors: Hugh W. Elder, Wm. Farwell, C. H. Kathan, D. W. Davis, Wm. Hanson, J. Brunet, H. P. Woodbury. Head Office: G. P. Butters, Secretary, Beebe Plain, Que. Formed to acquire and work granite or other quarries in Canada. Owns the quarrying rights over 200 acres in Stanstead County, Que., and are producers of rough, dimension and cut granite.

Starmount Mining Co., Ltd.—Capital, $500,000, divided into 500,000 shares of $1 each. Head Office: Victoria, B.C. Directors: H. W. Ferguson-Pollok, P. A. Paulson, A. W. Taylor, R. B. Punnett, all of Victoria, B.C. Formed for the purpose of mining in British Columbia.

Sterling Mining and Milling Co., Ltd.—Capital, $1,500,000. Shares $1 each. Trustees: Peter Leclair, John J. O'Donnell, Eli Thompson. Head Office: Sandon, B.C.

St. Keverne Mining Co.—Capital, $1,000,000. Shares $1 each. Head Office: Spokane, Wash.

Stoneleigh Mining Co.—Capital, $1,000,000. Shares $1 each. Head Office: Milwaukee, Wis.

Stratford Exploration and Development Co., Ltd.—Capital, $30,000. Shares, $1.00 each. Directors: Wm. F. Tye, S. M. Johnson, R. M. Ballantyne, John Brown, S. R. Hesson, W. F. Van Buskirk, A. K. King, H. M. Johnson, Wm. Lawrence. Head Office: Stratford, Ont. Objects: To prospect for, explore, contract for, purchase, lease or otherwise acquire mineral lands and mining locations in the Dominion of Canada.

Sudbury Gold and Coal Mining Co., Ltd.— Capital, $1,000,000. Shares $1.00 each. Directors: Murray C. Biggar, Charles Jessup, Alex. Fournier, Lawrence O'Connor, Henry J. Purvis. Head Office: Sudbury, Ont.

Sullivan Group Mining Co.—Capital, $2,500,000. Shares $1.00 each. Head Office: Spokane, Wash.

Superior Mining Co.— Capital, $1,000,000. Shares $1.00 each. Head Office: Spokane, Wash.

Surrey Mining and Prospecting Co., Ltd.—Capital, $100,000, divided into 100,000 shares of $1.00 each. Directors: H. A. Bell, J. E. Gaynor, N. R. Hopkins. Head Office: New Westminster, B. C. Formed for the purpose of carrying on mining operations in British Columbia.

Sydenham Mica and Mining Co.— Incorporated 10th May, 1889. Capital Stock, $250,000. Directors: Isaiah Smith, Sydenham, Ont., President; J. P. Lacey, Sydenham, Ont.; Dr. R. L. Burrage, Newark, N. J.; J. L. Armitage, Newark, N. J.; H. S. Dunn, Newark, N. J. Head Office: Jonathan P. Lacey, Secretary-Treasurer, Sydenham, Ont.

Telluride of Gold Mining Co., Ltd.— Capital, $1,000,000, divided into 1,000,000 shares of $1.00 each. Head Office: Vancouver, B.C. Directors: J. R. Brown, Harrison Hot Springs; R. J. Leckie, Vancouver; J. W. Girvin, Vancouver. Formed to acquire and work the mineral claims known as the "Gold Queen," "Prince," "Tellurium," "Wonderful," "Baby Mine," situated on Fire Mountain, in New Westminster District, British Columbia.

Temiscamingue Lithographic Mining Co., Ltd. — Incorporated 1896. Authorized Capital, $100,000, in shares of $100. Directors: Dr. R. P. Pattee,

Bernard Kelly, John Mode, Donald McLeod, N. McCallum. Head Office : Vankleek Hill, Prescott County, Ont. The operations of the company are to be carried on in the Township of Jarvis, in the District of Nipissing and elsewhere in the Province of Ontario.

Tennycape Manganese Co., Ltd.—Incorporated by an Act of the Legislature of Nova Scotia in January, 1894. Authorized Capital, $300,000. Directors : Duncan C. Fraser, M.P., President ; W. A. French, Upper Musquodoboit, N.S.; George E. Boak, Halifax ; J. T. Burgess, Halifax, N.S.; W. F. Jennison, Walton, N.S. Head Office : Windsor, Hants County, N.S. Formed to acquire and operate all the properties formerly owned by the Tennyson Manganese Co., and the Provincial Manganese Co. at Tennycarp, Province of Nova Scotia.

Terminal City Mining and Development Co., Ltd. — Capital, $800,000. Shares $1.00 each. Trustees : Jos. Coupland, William Bailey, A. J. Scott. Head Office: Vancouver, B.C.

Thistle Gold Mining Co., Ltd.— Capital, $350,000, divided into 350,000 shares of $1.00 each. Directors : J. S. Murray, W. J. Quinlan, A. F. McCrimmon, G. L. Courtney, J. Maynard, A. E. Belfry, F. A. Hall. Head Office : Victoria, B.C. Formed for the purpose of mining in British Columbia.

Tidal Wave Consolidated Mining Co., Ltd.—Capital, $1,000,000. divided into 1,000,000 shares of $1.00 each. Head Office : Vancouver, B.C. Directors : J. Loewan, J. M. Buxton, W. H. Carson, all of Vancouver, B.C. Formed for the purpose of mining in British Columbia.

Tobasco Prospecting and Exploration Co., Ltd.—Capital, $1,000,000. Shares $1.00 each. Trustees : H. P. McCraney, L. H. Northey, B. F. Budd, H. V. Stevenson. Head Office : Rossland, B. C.

Tobique Gypsum Co., Ltd.—Incorporated 1893. Authorized Capital, $200,000. Directors : Fred. H. Hall, Woodstock, N. B.; John Connor, St. John, N. B.; J. Stratton, St. John. Works : Parish of Gordon, Victoria County, N. B. Formed to operate gypsum properties in the Parish of Gordon, Victoria County, Province of New Brunswick.

Tobique Valley Gypsum Mining and Manufacturing Co., Ltd.—Incorporated 18th August, 1893. Authorized Capital, $50,000, in 500 share of $100 each. Directors : G. P. Brophy, President ; Hon. John Costigan, Hon. H. A. Connell, John Heney, J. B. Lynch. Head Office : John P. Dunne, Secretary-Treasurer, Ottawa. Formed to acquire and work the Arbuckle plaster mine. The property contains 150 acres, owned outright, together with a mining lease of an area extending one square mile in the Parish of Gordon, Victoria County, Province of New Brunswick. In 1893, 30 persons employed. Value of machinery, plant and building, $14,000.

Tom Payne Consolidated Mining Co., Ltd.—Capital, $1,000,000, divided into 1,000,000 shares of $1 each. Head Office : Rossland. Directors : F. M. Davis, F. B. Shaw, B. E. Gillespie, A. J. Shirley. Formed for the purpose of acquiring the "Tom Payne" and "Myrtle" mineral claims, situated on Wild Horse and Porcupine Creeks, tributaries of Salmon River in the Nelson Mining Division of British Columbia.

Toronto Mining Syndicate.—Capital, $1,000,000. Shares $1.00 each. Directors : John A. McGillvray, Alfred Ansley, Wm. K. McNaught, Thomas W. Dyas, Hugh C. McLean. Head Office : Toronto, Ont.

Toronto Tudor Mining Co., Ltd.—Capital, $1,000,000. Shares $1.00 each. Directors : Appleton J. Pattison, James W. Curry, Frederick Diver, George R. Warwick, Arthur F. Rutter. Head Office : Toronto, Ont.

Treasure Mountain Mines, Ltd.—Capital, $1,500,000. Shares $1.00 each. Trustees : Edward W. McKim, Jas. Fitzsimmons, W. H. Armstrong. Head Office ; Vancouver, B.C.

Trilby Mining Corporation Ltd.—Capital $75.00. Shares $1.00 each. Head Office: Buffalo, N.Y.

Trout Lake Mines and Milling Co.—Capital, $250,000, divied into 1,000,000 shares of 25 cents each. Head Office: Vancouver, B.C. Directors: Wm. J. Page, J. W. Campion, Charles Stimson. Formed for the purpose of mining in British Columbia.

Trust Mining Co.— Capital, $50,000. Shares $1.00 each. Head Office: Spokane, Wash.

Union Investment Co., Ltd.—Capital, $50,000. Shares $100.00 each. Trustees: J. A. Kirk, T. S. Gilmour, A. F. Corbin, S. P. Thompson. Head Office: Rossland, B.C.

United States and British Columbia Mining Co.—Capital, $10,000.00. Shares $100.00 each. Head Office: Kansas City, Mo., U.S.A.

Utica Group Mining and Developing Co., Ltd.—Capital, $1,000,000. Shares $1.00 each. Trustees: W. A. Campbell, C. J. Campbell, Thos. Anderson. Head Office: Rossland, B.C.

Vancouver and Boundary Creek Developing and Mining Co., Ltd.—Capital, $500,000. Shares 25 cents each. Trustees: Chas. Wilson, C. S. Douglas, Robert Wood. Head Office: Vancouver, B.C.

Vancouver and British Columbia General Exploration Co., Ltd.—Registered 1896. Capital, £25,000, divided into 25,000 shares of a value of £1 each. Head Office: 20 Threadneedle Street, London, England. Agents in Canada: Evans, Coleman & Evans, Vancouver, B.C.

Vancouver-London Mining Syndicate.—Capital, $250,000. Shares 50 cents each. Trustees: Thos. Mathews, L. N. Mackechnie, Jas. B. Smith, Jas. Ramsay. Head Office: Vancouver, B.C.

Vavasour Mining Association.—T. F. Nellis, Metcalfe Street, Ottawa, *President.* The property is situated on Lot 10 in the 12th Range of Hull, near the village of Cantley. Operated since May, 1891, and has produced over 300 tons of merchantable mica. Several hundred tons of phosphate of high grade are on the dump, awaiting an improvement in market. There are four veins of calcite, pyroxene and apatite running in a north-north-easterly direction with a dip of 45° east, one of which has been followed for a distance of 1,646 ft., the size varying from 3 ft. to 15 ft. Considerable work has been done, consisting at date chiefly of an opening 200 ft. and shafts of 90 ft. and 70 ft. respectively into a gallery of 80 ft. The principal vein has been opened for a length of over 400 ft. There is a cutting shop at the mine. A small force employed.

Victoria and Kootenay Mining and Development Co, Ltd.—Capital, $100,000. Shares $1.00 each. Directors: Geo. Riley, Richard Hall, Stephen Jones. Head Office: Victoria, B.C.

Victoria Gypsum Mining and Manufacturing Co., Ltd.—Incorporated by an Act of Nova Scotia Legislature, assented to 15th April, 1890, and amended by an Act dated 19th May, 1891. Authorized Capital, $100,000, divided into 2,000 shares of a value of $50.00 each. Directors: Wm. Gibson, Williamsport, Pa., President; J. C. Fender, Chester, Pa., Treas.; Hon. Gardener G. Hubbard, Washington, D. C.; W. F. McCurdy, Baddeck, C. B. Head Office: W. F. McCurdy, Resident Manager, Baddeck, C. B. Formed to mine and quarry gypsum on the Island of Cape Breton and elsewhere in the Province of Nova Scotia. The properties, a portion of which is held under lease, are all situate in Victoria County, N. S., and comprise the following parcels of land:—

730 acres at North Gut, St. Ann's; 725 acres at South Gut and Munroe's Point; 1,300 acres at Goose Cove; 1,400 acres at Port Bevis; 400 acres at Red Head; 400

acres at Gillies Point; 800 acres at Grand Narrows; 808 acres at Jamesville; 419 acres at Little Narrows; 400 acres at McAskill's Rear; 200 acres at Washabuck River.

In the fall of 1891 the company opened an extensive deposit of gypsum on its Port Bevis properiy, at a point about eight miles east of the Town of Baddeck, and operations were carried on vigorously since. There has been built a line of railway two miles from the quarries to wharf, equipped with locomotives, cars, etc., the whole estimated to have cost in the vicinity of $30,000. The wharf at Port Bevis can accommodate vessels drawing 23 ft. of water.

The company has also at North Gut, St. Ann's Harbor, two fine quarries, almost at the water's edge; two good wharves, at one of which there is a depth of 15 ft. of water at low tide, and at the other 21 ft. The quarries are situate about eight miles from the quarries at Port Bevis. Both the harbors of St. Ana's and Port Bevis are very easy of access and may be called perfect harbors for large or small vessels. Capacity for shipping at Port Bevis wharf, 400 tons per day.

Victoria Mining and Development Co., Ltd.—Incorporated 1897. Capital, $1,000,000, divided into 10,000 shares of $100 each. Directors: John Bryden, Victoria: M. McGregor, Victoria; J. E. Martin, Victoria. Chief place of business: Victoria, B.C.

Victoria Tripolite Co., Ltd.—Incorporated 1896. Authorized Capital, $7,000. Directors: J. D. Copland, Frank T. LeMoine, W. J. B. Bingham. Head Office: North Sydney, Cape Breton. Formed to mine tripolite in the Province of Nova Scotia.

Walla Walla Mining, Milling and Smelting Co.—Capital, $300,000, divided into 300,000 shares of a value of $1.00 each. Head Office: Walla Walla, Wash. Formed for the purpose of mining in British Columbia.

Wallingford Mica Co.—Organized 1st September, 1893. Owners: Edward Wallingford, N. A. Belcourt, Q.C., T. G. Coursolles. Head Office: T. G. Coursolles, managing owner, Ottawa. Edward Wallingford, Perkin's Mills P.O., Que., Mine Manager. Owns and operates a property containing 200 acres of mineral land, situate W½ of lot 16A and lot 16B and lot 17B, in the 8th Range of the Township of Templeton, County of Ottawa, Province of Quebec. 30 persons employed. The output of all grades was: in 1894, 150 tons; 1895, 225 tons.

Washington Mining and Leasing Co.—Capital, $1,000. Shares $1.00 each. Head Office: Spokane, Wash.

Washington Mining Co.— Capital, $1,000,000. Shares $1.00 each. Head Office: Spokane, Wash.

Waverley Mine, Ltd., B.C.—Registered 1897. Authorized Capital, £100,000 in shares of £1. Directors: Col. T. H. Ansley, J. S. Bridges, F. C. Hole, John King, J. H. Robertson. E. C. De Legundo. Advisory Board in British Columbia: John Grant, Revelstoke, B.C., and J. M. Kellie, M.L.A. Head Office: R. Stanley Williams, Secretary, 16 Copthall Avenue, London, E.C. Formed to acquire and work the "Waverley," mineral claim, comprising 52 acres, situated at the head of the North Fork of the Illicilewaet River and Downie Creek, West Kootenay District, British Columbia. The purchase consideration was £60,000, payable as to £5,000 in cash, £25,000 in fully paid shares, and the balance in cash or shares at the option of the Directors.

Webbwood General Mining and Development Co., Ont., Ltd.—Capital, $490,000. Shares $1.00 each. Directors: Geo. Bayes, Alex. Beck, John Robinson. Head Office: Webbwood, Ont.

Wentworth Gypsum Co., Ltd.—Incorporated by an Act of the Legislature of Nova Scotia 19th May, 1891. Authorized Capital, $200,000, in 200 shares of $100 each. Clarence H. Dimock, Manager and Treasurer; E. Norman Dimock, Secretary. Head Office: Windsor, Nova Scotia. Formed to search and prospect

for, to quarry, mine, work, win, manufacture and prepare for use and sale by any process, and carry, move, sell, ship and deal in gypsum, plaster of paris, lime, limestone, building stone, etc., in the Province of Nova Scotia and Island of Cape Breton. Owns a property containing about 1,000 acres at Wentworth, in the Township of Windsor, Hants County, Province of Nova Scotia. Two hundred persons employed. Owns and operates a line of railway, locomotives and rolling stock, connecting with shipping wharves about two miles distant from quarries. The equipment comprises two cable derricks, each having a span of 1,025 ft. and of a capacity of 500 tons per day, electric rock drills and other plant. The annual output is about 100,000 tons.

Western Canada Mining Investments Co., Ltd. — Capital, $1,000,000, divided into 1,000,000 shares of $1.00 each. Head Office: Slocan City, B.C. Directors: A. J. Andrews, Winnipeg; J. L. White, F. S. Andrews, of Slocan City, B.C. Formed for the purpose of mining in British Columbia.

Western Canadian Mining and Development Co., Ltd.—Capital, $1,200,000. Shares $1.00 each. Trustees: William A. Martel, Orville D. Hoar, Hugh A. Brown. Head Office: Revelstoke, B.C.

Western Prospecting and Promoting Co., Ltd.—Incorporated 1895. Authorized Capital, $100,000. Directors: R. E. Leonard, T. H. Tracey, George Geary, A. A. Smith, E. C. Taylor. Head Office: Vancouver, B. C. Formed to carry on the business of mining in British Columbia.

West Kootenay Mining Co., Ltd.—Capital, $1,000,000. Shares $1.00 each. Trustees: D. Chesterfield McMorris, Chas. A. Wright, C. F. Caldwell. Head Office: Kaslo, B. C.

White Grouse Copper Mining Co.—Capital, $1,000,000. Shares $1.00 each. Head Office: Spokane, Washington.

White Grouse Mining Co.—Capital, $1,000,000. Shares $1.00 each. Head Office: Spokane, Wash.

Willow Gold Mining Co.— Capital, $1,000.000, divided into 1,000,000 shares of $1.00 each. Head Office: Spokane, Wash. Formed for the purpose of mining in British Columbia.

Windsor Salt Co., Ltd.—Incorporated 1895. Authorized Capital, $200,000, in shares of $100. Directors: Sir William Van Horne, Montreal; Thos. H. McGraw, Poughkeepsie, N. Y.; Ernest G. Henderson, Windsor, Ont.; Thos. Cryney, Bay City, Mich; Robert F. Sutherland, Windsor, Ont. Head Office: E. G. Henderson, Manager, Windsor, Ont. Owns and operates the Windsor Salt Works at Windsor, Ont. Two wells of a depth of 1,265 ft. Works opened June, 1894. Capacity, 800 bbls. per day; vacuum system, Craney's patent. Connected by siding with C. P. Ry. and located along the Detroit River, with dock accommodation and shipping facilities to all lake ports. Forty-five persons employed.

Wisconsin Consolidated Mines, Ltd.— Capital, $1,000,000, divided into 1,000,000 shares of $1.00 each. Directors: P. A. McPhee, D. M. Bongard, C. Behrman, D. W. King, F. M. O'Brien, all of Kaslo, B. C. Head Office: Kaslo, B. C. Formed for the purpose of mining in British Columbia.

Wolf Hill Mines Co., Ltd.—Incorporated 1895. Authorized Capital, $100,000. Directors: James Dunsmuir, Wm. Ralph, T. Lubbe, C. E. Pooley. Head Office: C. E. Pooley, Victoria, B. C. Formed to purchase certain mineral claims on Wolf Creek, in the District of Sooke, known as the "War Horse" and "Empress," for the sum of $25,000, to be paid for in fully paid shares of the company, and for carrying on the business of miners.

W. Thomas Newman Gold Amalgamating, Concentrating and Mining Co. of British Columbia, Ltd.—Capital, $1,000,000, divided into 1,000,000

shares of $1.00 each. Directors: E. Fearon, F. J. Claxton and W. Dalby, all of Victoria, B. C. Head Office: Victoria, B. C. Formed for the purpose of mining in British Columbia, and for the right to manufacture, use and sell the W. Thos. Newman Gold Saving Machine in the Province of British Columbia.

Yale and Kootenay Mining Co., Ltd.—Capital, $100,000. Shares $100 each. Trustees: Angus McNish, William Brown, A. C. Sinclair. Head Office: Rossland, British Columbia.

Yankee Boy Mining and Milling Co., Ltd.—Capital, $1,000,000, divided into 1,000,000 shares of $1.00 each. Head Office: Rossland, B. C. Directors: L. H. Northey, A. Edge, H. Van Ness Stevenson. Formed to purchase the "Yankee Boy" and "Stanley" mineral claims, situated on the North Fork of Carpenter Creek, in the New Denver Mining Division of West Kootenay, British Columbia.

Yankee Girl Mining Co., Ltd.—Capital, $1,000,000, divided into 1,000,000 shares of $1.00 each. Directors: J. Henry, M. W. Garrison, A. Lucas, G. C. Marsh, and H. W. Bucke. Head Office: Kaslo, B. C. Formed for the purpose of mining in British Columbia.

Yukon Mining, Trading and Transportation Co., Ltd.—Capital, $10,000. Shares $10 each. Head Office: Wilmington, Delaware.

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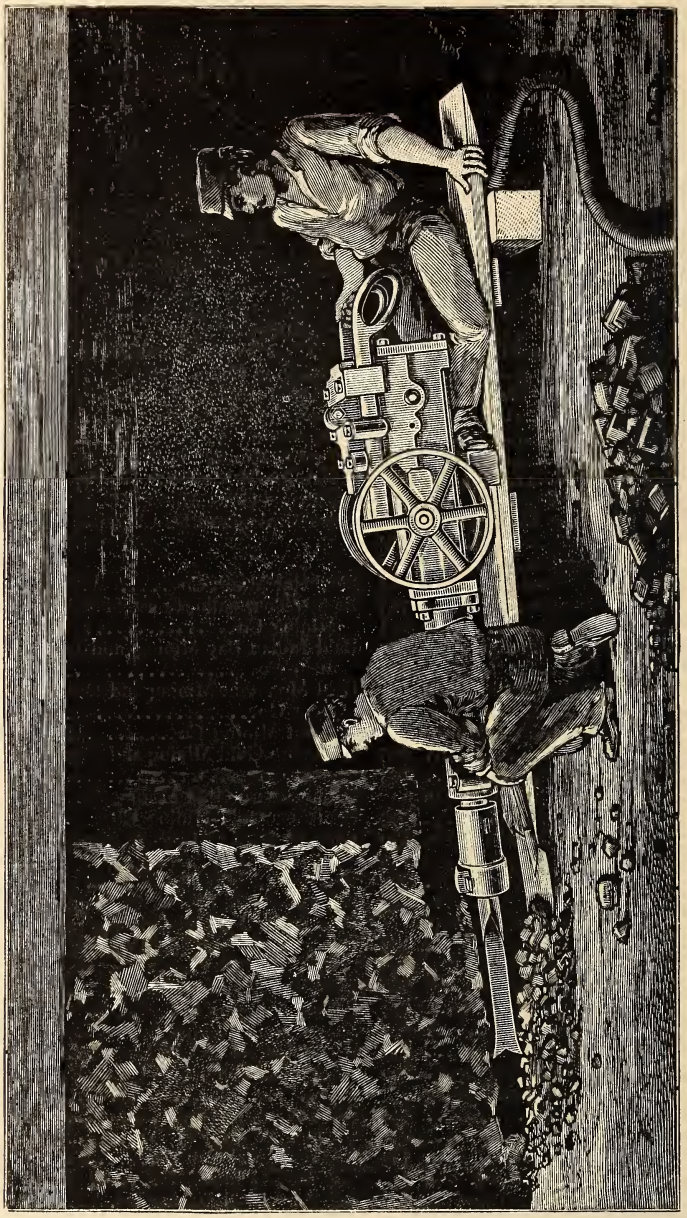

Cutting Coal with the Ingersoll-Sergeant Coal Cutter.

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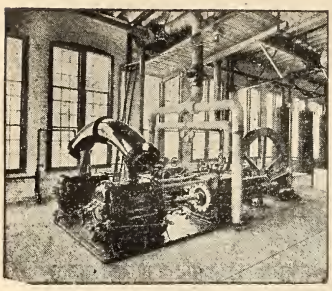
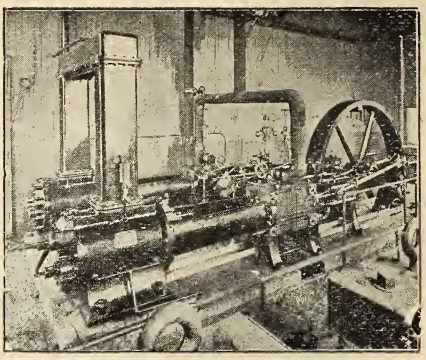
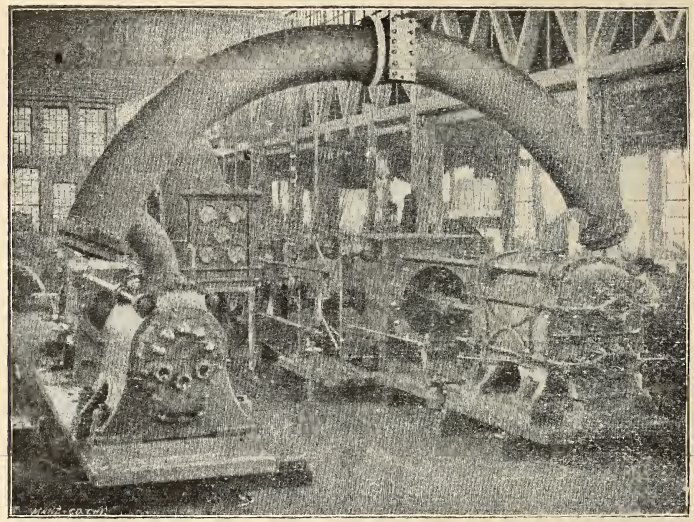
HIGH CLASS COMPRESSORS.







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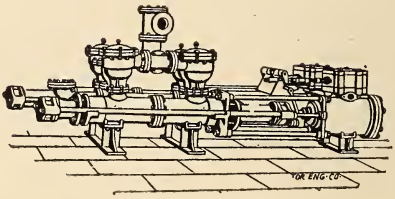
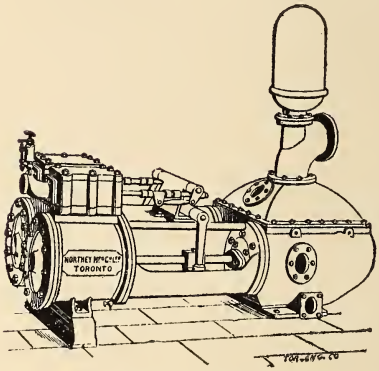
MINING · PUMPS

FOR ALL DUTIES.



Pot Valve Pattern.



Regular Duplex.

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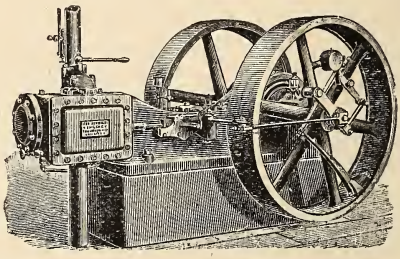

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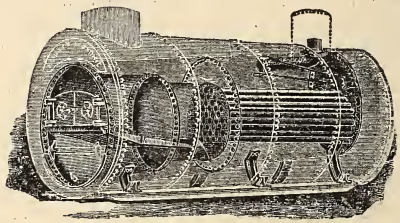

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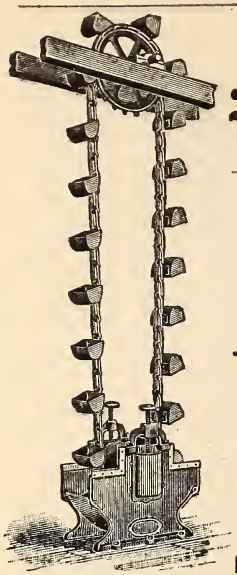

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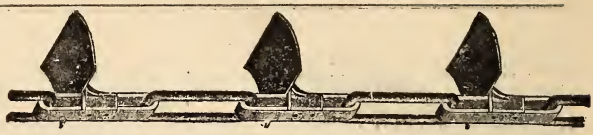

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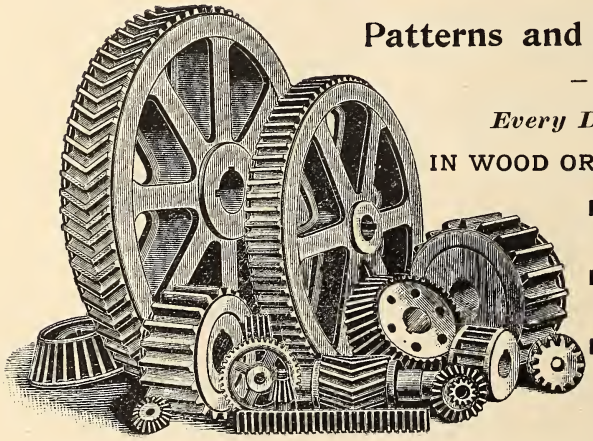

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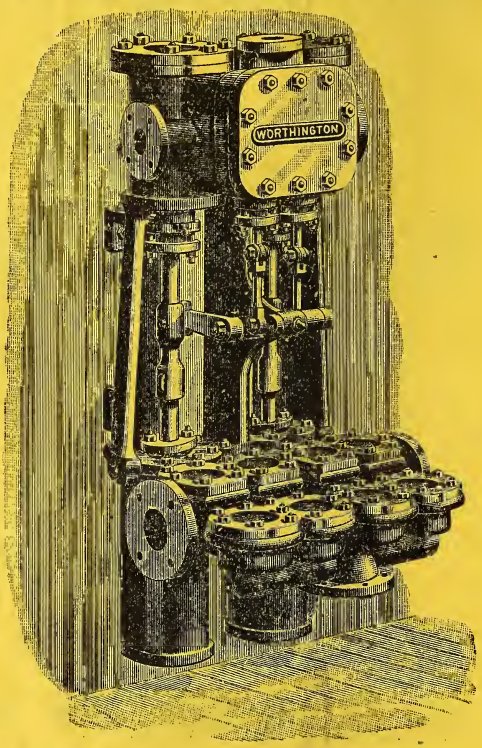

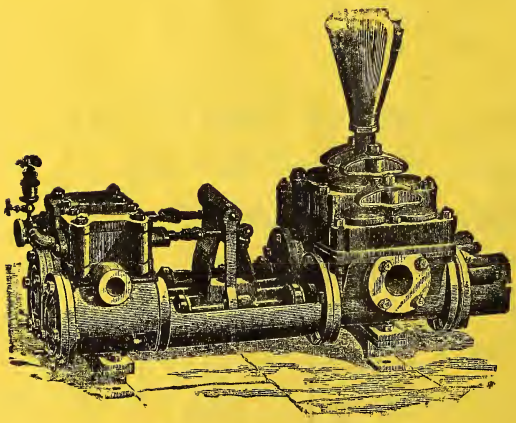

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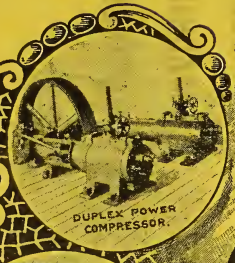

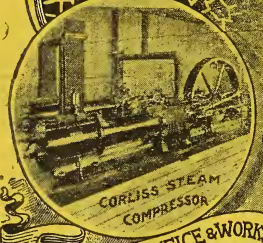

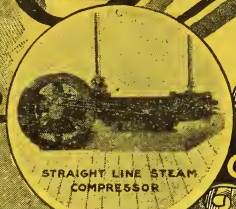

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